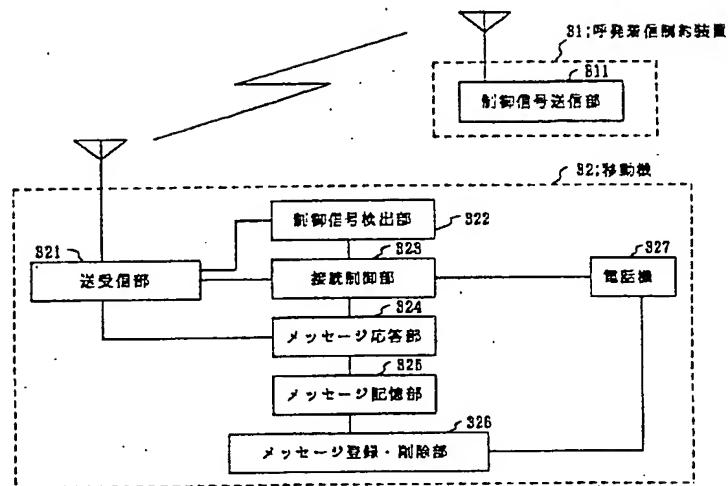
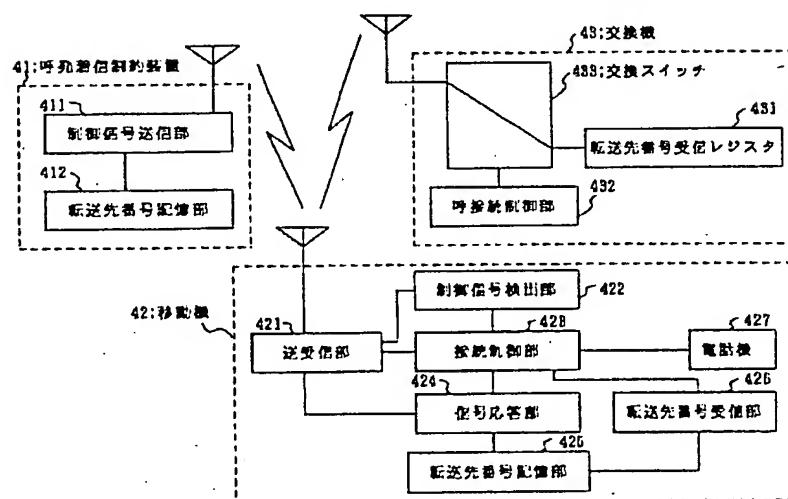


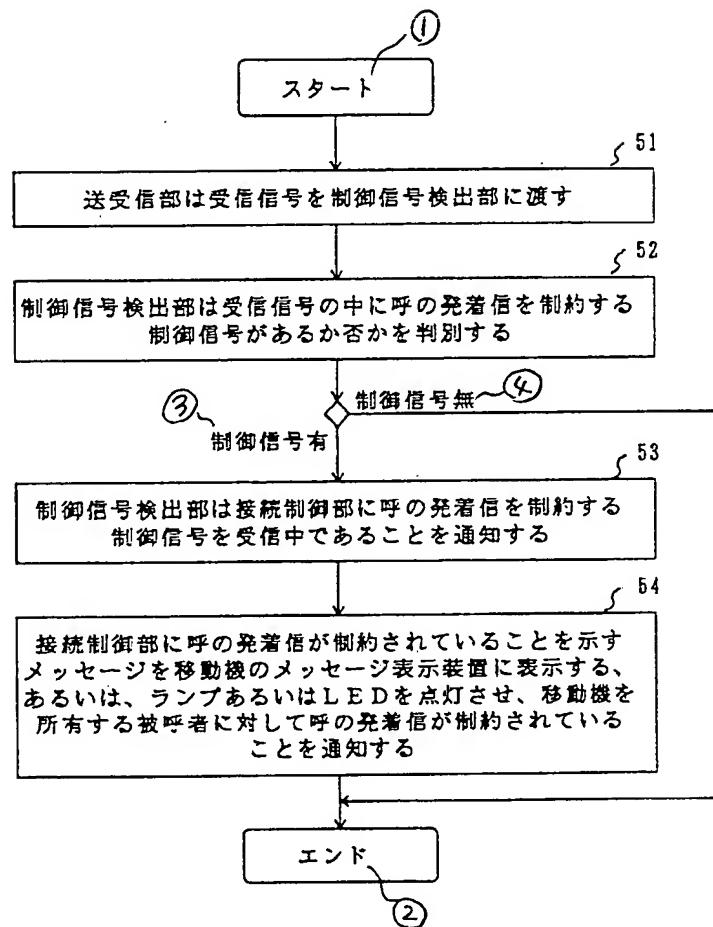
[図3] Fig. 3



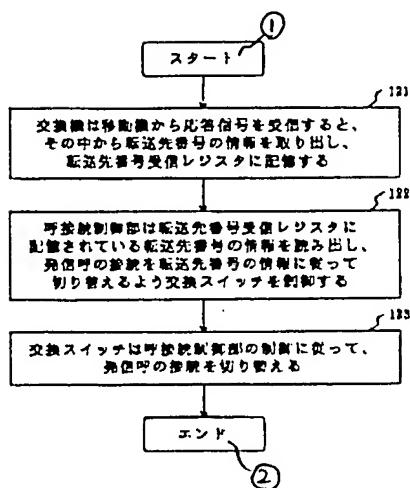
[図4] Fig. 4



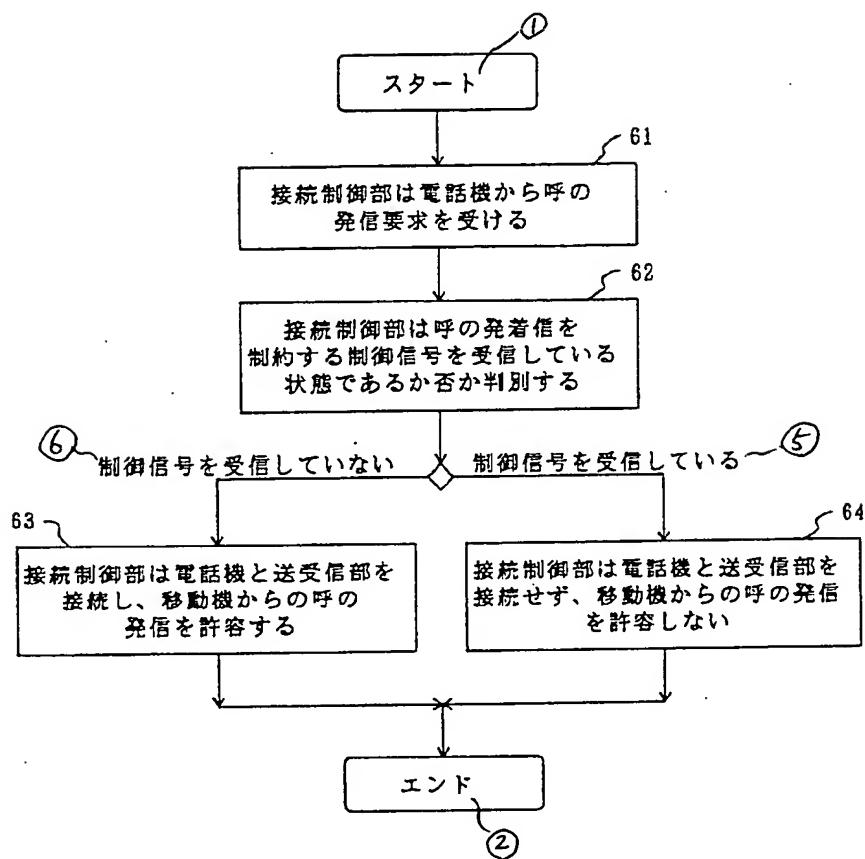
[図5] Fig. 5



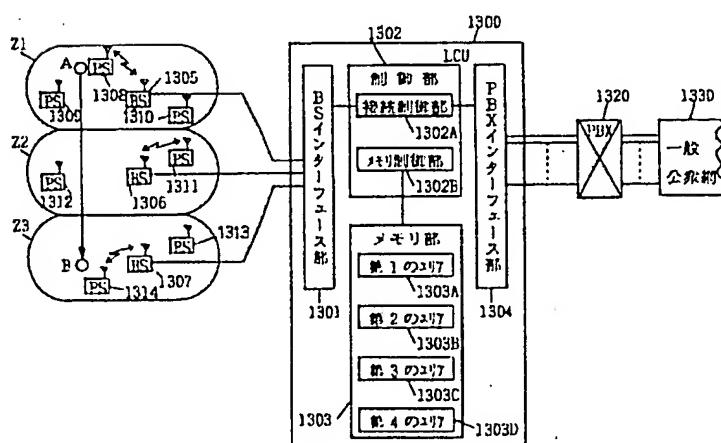
[図12] Fig. 12



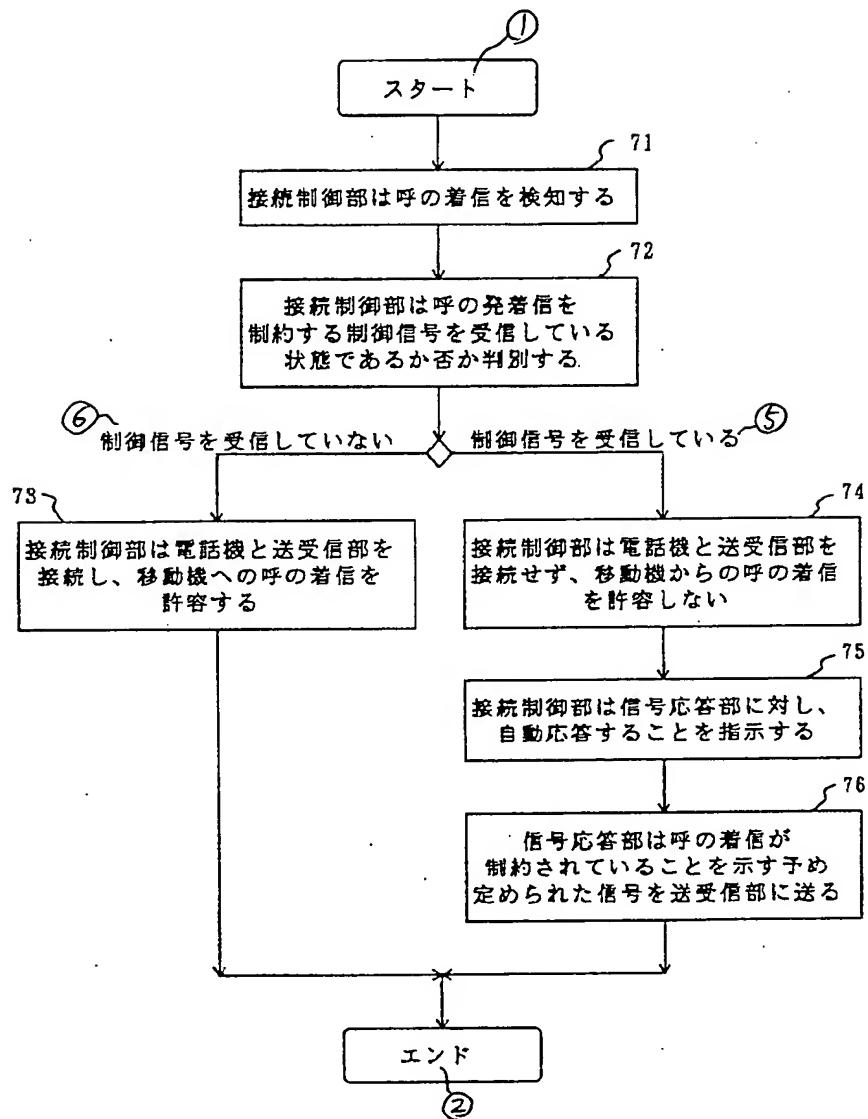
【図6】～ Fig. 6



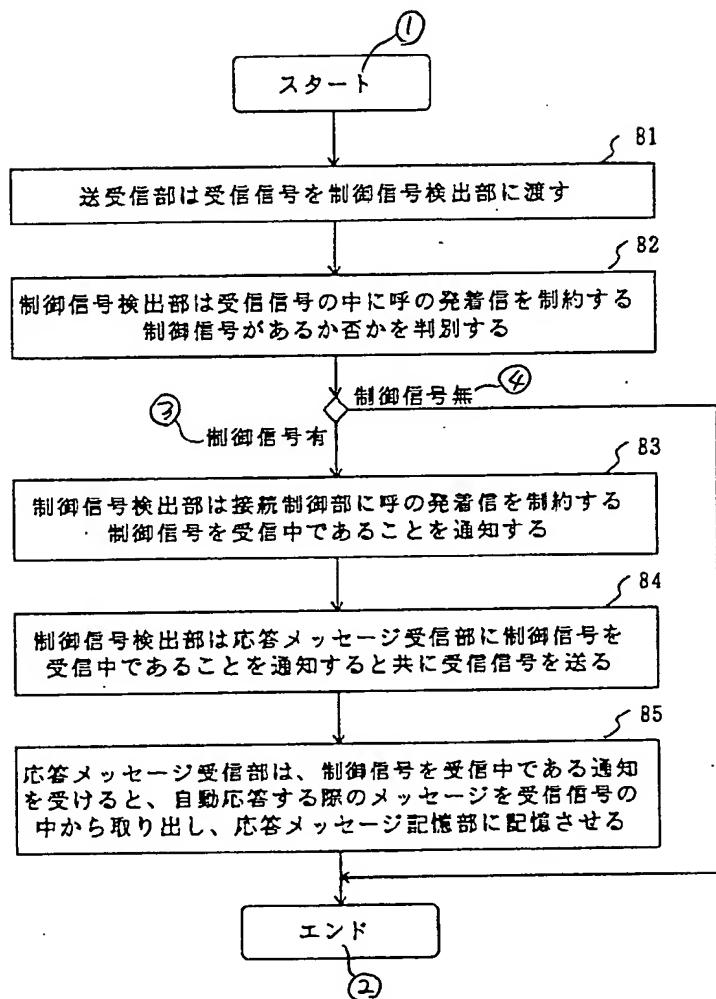
【図13】～ Fig. 13



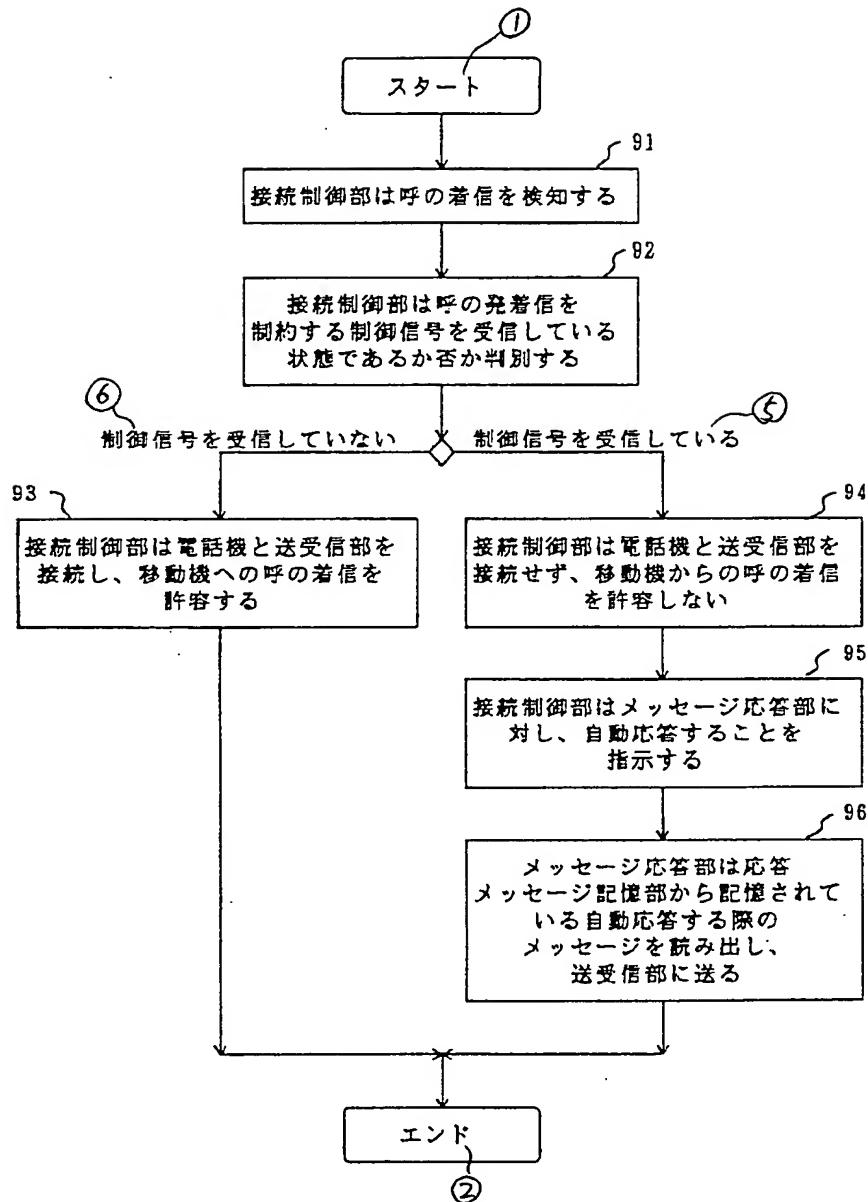
[図7]～Fig. 7



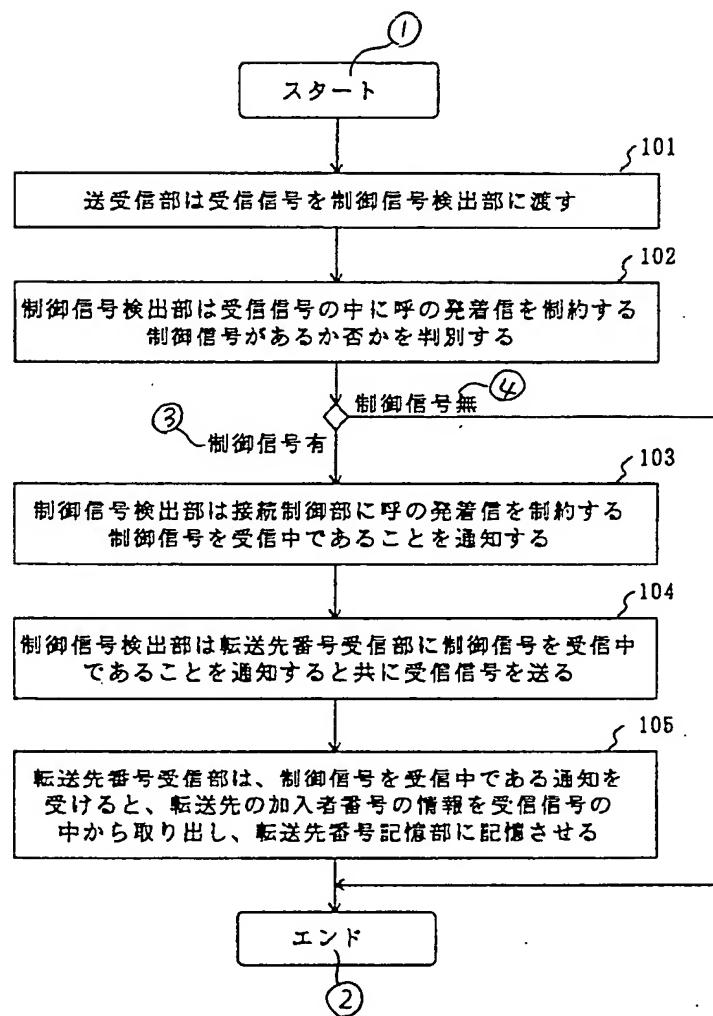
[図8]～Fig. 8



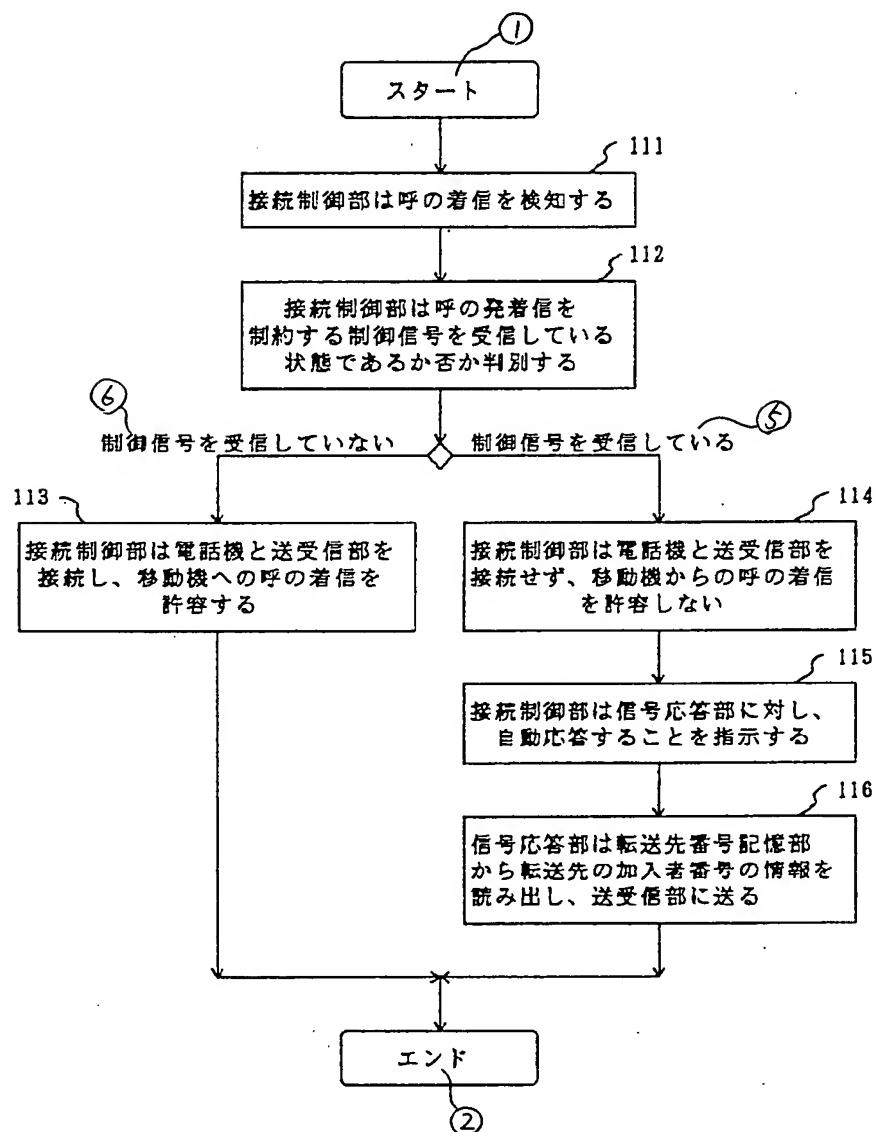
[図9] Fig. 9



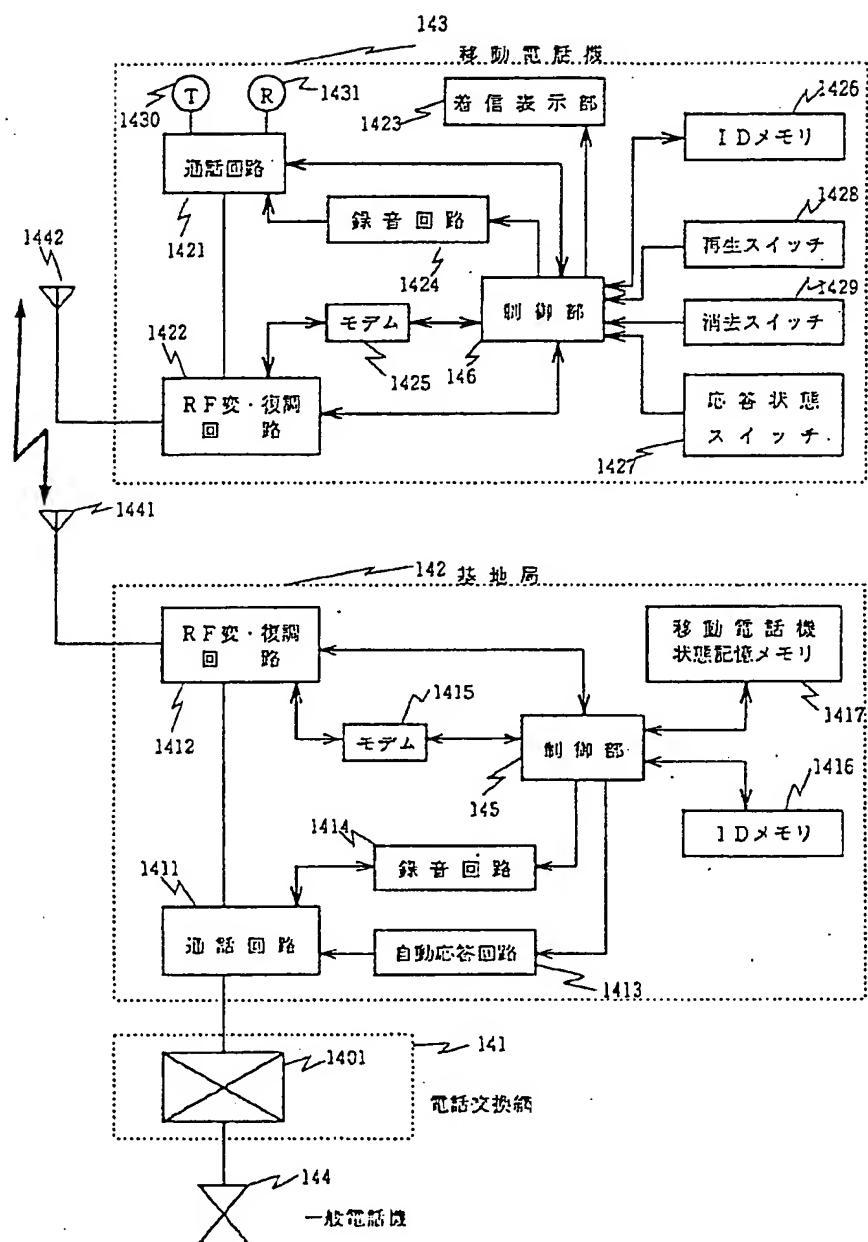
【図10】～ Fig. 10



【図11】 Fig. 11



[図14]～Fig. 14



PATENT ABSTRACTS OF JAPAN

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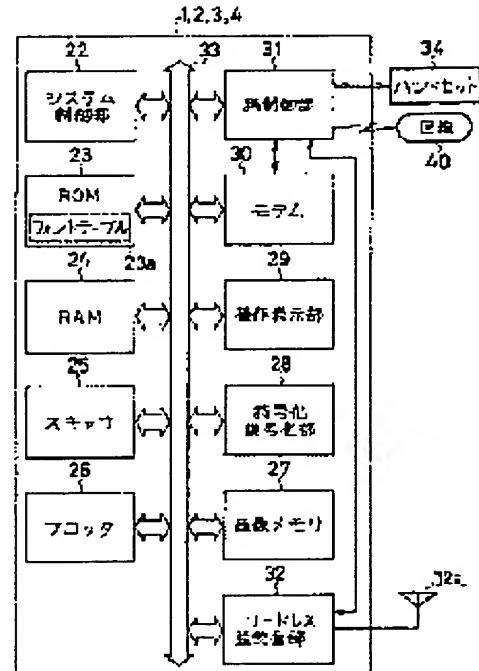
(21)Application number : 09-366947 (71)Applicant : RICOH CO LTD
(22)Date of filing : 26.12.1997 (72)Inventor : NAKAJIMA MASATO

(54) COMMUNICATION TERMINAL DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To effectively utilize a line, a transmitting and receiving function, and hardware resources by requesting substitutional reception by another device through a cordless transmitting and receiving means and making a virtual connection for substitutional reception of a communication reaching this line, and accepting a substitutional reception request from the other device and making a virtual connection between another line and this device through the cordless transmitting and receiving means.

SOLUTION: A system control part 22 monitors whether or not transmission or telephone call is started at its own device and judges whether or not substitutional transmission is being requested of another device in such a case. When not, it is judged whether or not the substitutional reception corresponds to a request from another device and when not, it is judged whether or not another priority line is set in an inter-device transfer management table 4a; and the line state of the priority line is inquired through a cordless transmission and reception part 32. When the priority line is free, an ID set between the device corresponding to the priority line and this device is reported through the cordless transmission and reception part 32 to establish a virtual line.



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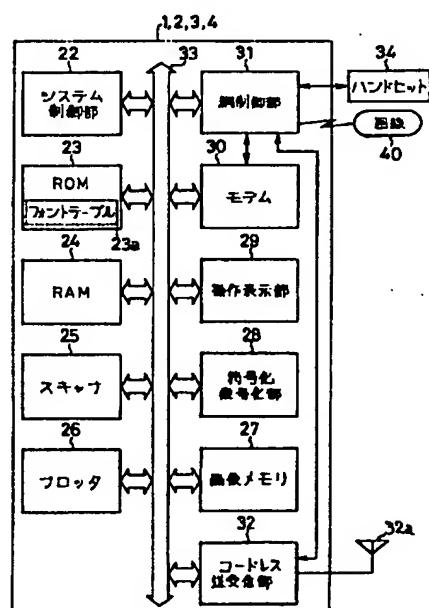
(74)代理人 弁理士 紋田 誠

〔54〕【発明の名称】 通信端末装置

(57) 【要約】

【課題】 接続された回線、送信機能、及び、受信機能を有効に利用でき、ハードウェア資源を有効活用できる通信端末装置を提供すること。

【解決手段】 他装置と無線通信を行うコードレス送受信手段と、自回線に着信があった場合に、必要に応じて前記コードレス送受信手段を介して他装置に代行受信を依頼して、当該依頼を受諾した他装置と自回線とを前記コードレス送受信手段を介して仮想接続して自回線に着信した通信を他装置に代行受信させることを特徴とする。



【特許請求の範囲】

【請求項1】 回線を介して通信を行う通信端末装置において、

他装置と無線通信を行うコードレス送受信手段と、自装置に接続された自回線に着信があった場合に、必要に応じて前記コードレス送受信手段を介して他装置に代行受信を依頼して、当該依頼を受諾した他装置と自回線とを前記コードレス送受信手段を介して仮想接続して自回線に着信した通信を他装置に代行受信させる自回線着信通信転送手段と、前記コードレス送受信手段を介して他装置から代行受信の依頼があると、当該依頼を受諾して当該他装置に接続された他回線と自装置とを前記コードレス送受信手段を介して仮想接続して他回線に着信した通信を代行受信する他回線着信通信代行受信手段とを備えたことを特徴とする通信端末装置。

【請求項2】 回線を介して通信を行う通信端末装置において、

他装置と無線通信を行うコードレス送受信手段と、自装置から通信が起動された場合に、必要に応じて前記コードレス通信手段を介して他装置に当該他装置に接続された他回線の借用を依頼して、当該依頼を受諾した他装置に接続された他回線と自装置とを前記コードレス送受信手段を介して仮想接続して前記自装置から起動された通信を他回線を使用して行う自装置起動通信転送手段と、前記コードレス送受信手段を介して他装置から自装置に接続された自回線の借用の依頼があると、当該依頼を受諾して自回線と他装置とを前記コードレス送受信手段を介して仮想接続して前記他装置から起動された通信を自回線を使用させて行わせる他装置起動通信中継手段とを備えたことを特徴とする通信端末装置。

【請求項3】 前記自回線着信通信転送手段は、前記コードレス送受信手段を介して他装置に代行受信を依頼する際に、予め記憶していた当該他装置に対応する所定の識別情報を通知する一方、前記他回線着信通信代行受信手段は、前記コードレス送受信手段を介して他装置から代行受信の依頼があると、併せて通知された識別情報と、必要に応じて予め記憶していた当該他装置に対応する識別情報を照合して一致した場合にのみ、当該依頼を受諾して当該他装置に接続された他回線と自装置とを前記コードレス送受信手段を介して仮想接続して他回線に着信した通信を代行受信することを特徴とする請求項1記載の通信端末装置。

【請求項4】 前記自装置起動通信転送手段は、前記コードレス通信手段を介して他装置に当該他装置に接続された他回線の借用を依頼する際に、予め記憶していた当該他装置に対応する所定の識別情報を通知する一方、前記他装置起動通信中継手段は、前記コードレス送受信手段を介して他装置から自装置に接続された自回線の借用の依頼があると、併せて通知された識別情報と、必要に応じて予め記憶していた当該他装置に対応する識別情報

とを照合して一致した場合にのみ、当該依頼を受諾して自回線と他装置とを前記コードレス送受信手段を介して仮想接続して前記他装置から起動された通信を自回線を使用させて行わせることを特徴とする請求項2記載の通信端末装置。

【請求項5】 必要に応じて優先他装置を設定する優先他装置設定手段を更に備える一方、前記自回線着信通信転送手段は、自回線に着信があった場合において、前記優先他装置が設定されているときに、前記コードレス送受信手段を介して前記優先他装置に代行受信を依頼することを特徴とする請求項1または3のいずれかの記載の通信端末装置。

【請求項6】 必要に応じて優先他装置を設定する優先他装置設定手段を更に備える一方、前記自装置起動通信転送手段は、自装置から通信が起動された場合において、前記優先他装置が設定されているときに、前記コードレス送受信手段を介して前記優先他装置に当該他装置に接続された他回線の借用を依頼することを特徴とする請求項2または4のいずれかの記載の通信端末装置。

【請求項7】 前記コードレス送受信手段を介して他装置のうちの代行受信可能なものを検索する空き他装置検索手段を更に備え、前記自回線着信通信転送手段は、前記空き他装置検索手段が検索した他装置に対して、前記コードレス送受信手段を介して代行受信を依頼することを特徴とする請求項1、3または5のいずれかの記載の通信端末装置。

【請求項8】 前記コードレス送受信手段を介して他装置のうちの他回線を借用可能なものを検索する空き他回線検索手段を更に備え、前記自装置起動通信転送手段は、前記空き他回線検索手段が検索した他装置に対して、前記コードレス送受信手段を介して当該他装置に接続された他回線の借用を依頼することを特徴とする請求項1、3または5のいずれかの記載の通信端末装置。

【請求項9】 前記自回線着信通信転送手段は、自装置に接続された自回線に着信があった場合において、自装置が受信不可状態のときに、前記コードレス送受信手段を介して他装置に代行受信を依頼することを特徴とする請求項1、3、5または7のいずれかの記載の通信端末装置。

【請求項10】 前記自回線着信通信転送手段により、自回線に着信した通信が他装置により代行受信された場合は、自回線に着信した通信が他装置に代行受信された旨を出力する出力手段を更に備えたことを特徴とする請求項1、3、5、7または9のいずれかの記載の通信端末装置。

【請求項11】 前記自回線着信通信転送手段により、自回線に着信した通信が他装置により代行受信された場合、または、前記他回線着信通信代行受信手段により他回線に着信した通信を代行受信した場合に、それら各通信に関連して得られる情報を転送履歴管理情報として記

憶する管理情報記憶手段と、その管理情報記憶手段が記憶する転送履歴管理情報に基づいて転送履歴管理レポートを出力するレポート出力手段とを更に備えたことを特徴とする請求項1、3、5、7、9または10のいずれかの記載の通信端末装置。

【請求項12】 前記自装置起動通信転送手段により、自装置から起動された通信が他回線を使用して行われた場合、または、前記他装置起動通信中継手段により、他装置から起動された通信が自回線を使用させて行われた場合に、それら各通信に関連して得られる情報を転送履歴管理情報として記憶する管理情報記憶手段と、その管理情報記憶手段が記憶する転送履歴管理情報に基づいて転送履歴管理レポートを出力するレポート出力手段とを更に備えたことを特徴とする請求項2、4、6または8のいずれかの記載の通信端末装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 本発明は、ファクシミリ装置等の、回線を介して通信を行う通信端末装置に関する。

【0002】

【従来の技術】 ファクシミリ装置等の通信端末装置において、送信中または通話中には、装置の送信機能や、自装置に接続された回線（自回線）が使用中の状態であるため、受信することができない。また、受信中には、装置の受信機能や自回線が使用中の状態であるため、送信や通話を行うことができない。

【0003】 一方、オフィス等の複数台のファクシミリ装置が設置される環境においては、各ファクシミリ装置は、送信・通話または受信のために待機中で空いていたり、または、送信中、受信中で使用中であったりするが、全てのファクシミリ装置が使用中であることはまれで、待機中で空いているファクシミリ装置がある場合が多い。また、例え、空いているファクシミリ装置がなかったとしても、送信中のファクシミリ装置においては、受信機能は空いており、受信中のファクシミリ装置においては、送信機能は空いている。

【0004】

【発明が解決しようとする課題】 しかし、従来のファクシミリ装置は、自装置が受信中である場合には、自装置におけるユーザによる送信操作を拒否して、送信を受け付けず、送信中であれば、回線が使用中であるために、当然に受信することができなかった。

【0005】 そのため、ユーザは、空いている別のファクシミリ装置を探して使用する必要があり、面倒であるばかりでなく、各ファクシミリ装置に接続された回線、各ファクシミリ装置の送信機能及び受信機能を有效地に利用できず、ハードウェア資源を有効活用できていないという問題点があった。

【0006】 本発明は係る事情に鑑みてなされたものであり、接続された回線、送信機能、及び、受信機能を有

効に利用でき、ハードウェア資源を有効活用できる通信端末装置を提供することを目的とする。

【0007】

【課題を解決するための手段】 上記目的を達成するため、請求項1記載の通信端末装置は、回線を介して通信を行う通信端末装置において、他装置と無線通信を行うコードレス送受信手段と、自装置に接続された自回線に着信があった場合に、必要に応じて前記コードレス送受信手段を介して他装置に代行受信を依頼して、当該依頼を受諾した他装置と自回線とを前記コードレス送受信手段を介して仮想接続して自回線に着信した通信を他装置に代行受信させる自回線着信通信転送手段と、前記コードレス送受信手段を介して他装置から代行受信の依頼があると、当該依頼を受諾して当該他装置に接続された他回線と自装置とを前記コードレス送受信手段を介して仮想接続して他回線に着信した通信を代行受信する他回線着信通信代行受信手段とを備えたことを特徴とする。

【0008】 請求項2記載の通信端末装置は、回線を介して通信を行う通信端末装置において、他装置と無線通信を行うコードレス送受信手段と、自装置から通信が起動された場合に、必要に応じて前記コードレス通信手段を介して他装置に当該他装置に接続された他回線の借用を依頼して、当該依頼を受諾した他装置に接続された他回線と自装置とを前記コードレス送受信手段を介して仮想接続して前記自装置から起動された通信を他回線を使用して行う自装置起動通信転送手段と、前記コードレス送受信手段を介して他装置から自装置に接続された自回線の借用の依頼があると、当該依頼を受諾して自回線と他装置とを前記コードレス送受信手段を介して仮想接続して前記他装置から起動された通信を自回線を使用させて行わせる他装置起動通信中継手段とを備えたことを特徴とする。

【0009】 請求項3記載の通信端末装置は、請求項1記載の通信端末装置において、前記自回線着信通信転送手段は、前記コードレス送受信手段を介して他装置に代行受信を依頼する際に、予め記憶していた当該他装置に対応する所定の識別情報を通知する一方、前記他回線着信通信代行受信手段は、前記コードレス送受信手段を介して他装置から代行受信の依頼があると、併せて通知された識別情報と、必要に応じて予め記憶していた当該他装置に対応する識別情報をと照合して一致した場合にのみ、当該依頼を受諾して当該他装置に接続された他回線と自装置とを前記コードレス送受信手段を介して仮想接続して他回線に着信した通信を代行受信することを特徴とする。

【0010】 請求項4記載の通信端末装置は、請求項2記載の通信端末装置において、前記自装置起動通信転送手段は、前記コードレス通信手段を介して他装置に当該他装置に接続された他回線の借用を依頼する際に、予め記憶していた当該他装置に対応する所定の識別情報を通

知する一方、前記他装置起動通信中継手段は、前記コードレス送受信手段を介して他装置から自装置に接続された自回線の借用の依頼があると、併せて通知された識別情報と、必要に応じて予め記憶していた当該他装置に対応する識別情報を照合して一致した場合にのみ、当該依頼を受諾して自回線と他装置とを前記コードレス送受信手段を介して仮想接続して前記他装置から起動された通信を自回線を使用させて行わせることを特徴とする。

【0011】請求項5記載の通信端末装置は、請求項1または3のいずれかの記載の通信端末装置において、必要に応じて優先他装置を設定する優先他装置設定手段を更に備える一方、前記自回線着信通信転送手段は、自回線に着信があった場合において、前記優先他装置が設定されているときに、前記コードレス送受信手段を介して前記優先他装置に代行受信を依頼することを特徴とする。

【0012】請求項6記載の通信端末装置は、請求項2または4のいずれかの記載の通信端末装置において、必要に応じて優先他装置を設定する優先他装置設定手段を更に備える一方、前記自装置起動通信転送手段は、自装置から通信が起動された場合において、前記優先他装置が設定されているときに、前記コードレス送受信手段を介して前記優先他装置に当該他装置に接続された他回線の借用を依頼することを特徴とする。

【0013】請求項7記載の通信端末装置は、請求項1、3または5のいずれかの記載の通信端末装置において、前記コードレス送受信手段を介して他装置のうちの代行受信可能なものを検索する空き他装置検索手段を更に備え、前記自回線着信通信転送手段は、前記空き他装置検索手段が検索した他装置に対して、前記コードレス送受信手段を介して代行受信を依頼することを特徴とする。

【0014】請求項8記載の通信端末装置は、請求項1、3または5のいずれかの記載の通信端末装置において、前記コードレス送受信手段を介して他装置のうちの他回線を借用可能なものを検索する空き他回線検索手段を更に備え、前記自装置起動通信転送手段は、前記空き他回線検索手段が検索した他装置に対して、前記コードレス送受信手段を介して当該他装置に接続された他回線の借用を依頼することを特徴とする。

【0015】請求項9記載の通信端末装置は、請求項1、3、5または7のいずれかの記載の通信端末装置において、前記自回線着信通信転送手段は、自装置に接続された自回線に着信があった場合において、自装置が受信不可状態のときに、前記コードレス送受信手段を介して他装置に代行受信を依頼することを特徴とする。

【0016】請求項10記載の通信端末装置は、請求項1、3、5、7または9のいずれかの記載の通信端末装置において、前記自回線着信通信転送手段により、自回線に着信した通信が他装置により代行受信された場合

は、自回線に着信した通信が他装置に代行受信された旨を出力する出力手段を更に備えたことを特徴とする。

【0017】請求項11記載の通信端末装置は、請求項1、3、5、7、9または10のいずれかの記載の通信端末装置において、前記自回線着信通信転送手段により、自回線に着信した通信が他装置により代行受信された場合、または、前記他回線着信通信代行受信手段により他回線に着信した通信を代行受信した場合に、それら各通信に関連して得られる情報を転送履歴管理情報として記憶する管理情報記憶手段と、その管理情報記憶手段が記憶する転送履歴管理情報に基づいて転送履歴管理レポートを出力するレポート出力手段とを更に備えたことを特徴とする。

【0018】請求項12記載の通信端末装置は、請求項2、4、6または8のいずれかの記載の通信端末装置において、前記自装置起動通信転送手段により、自装置から起動された通信が他回線を使用して行われた場合、または、前記他装置起動通信中継手段により、他装置から起動された通信が自回線を使用させて行われた場合に、それら各通信に関連して得られる情報を転送履歴管理情報として記憶する管理情報記憶手段と、その管理情報記憶手段が記憶する転送履歴管理情報に基づいて転送履歴管理レポートを出力するレポート出力手段とを更に備えたことを特徴とする。

【0019】

【発明の実施の形態】以下、添付図面を参照しながら、本発明の実施の形態を詳細に説明する。

【0020】先ず、図1は、本発明の実施の形態に係る通信端末装置としてのファクシミリ装置1、2、3及び4の設置形態を示している。

【0021】同図において、ファクシミリ装置1(FAX1)、ファクシミリ装置2(FAX2)、ファクシミリ装置3(FAX3)、及び、ファクシミリ装置4(FAX4)は、後述する各コードレス送受信手段32のアンテナ32aによる無線通信が可能な範囲内設置されていて、FAX1は、自回線L1により電話回線40に接続されているFAX2、3及び4もそれぞれ同様に、各自回線L2、L3及びL4により電話回線40に接続されている。そして、各ファクシミリ装置は、基本的に40は、それぞれ、各自回線を介したファクシミリ通信を行う。

【0022】図2に、ファクシミリ装置1、2、3及び4のブロック構成について示す。

【0023】同図において、ファクシミリ装置1、2、3及び4は、互いに同一構成で、システム制御部22、ROM23、RAM24、スキャナ25、プロッタ26、画像メモリ27、符号化復号化部28、操作表示部29、モデル30、綱制御部31、コードレス送受信部32、システムバス33、及びハンドセット34により構成されている。

【0024】システム制御部22は、ROM23書き込まれた制御プログラムに従って、RAM24を作業領域として使用しながら、装置各部を制御するものである。

【0025】ROM23は、前述したように、システム制御部22が上記装置各部を制御するための制御プログラムが記憶されているリードオンリーメモリである。また、ROM23には、各文字コードにフォントデータを対応付けたフォントテーブル23aが記憶されていて、システム制御部22は、文字列を画情報に変換する場合には、フォントテーブル23aを参照する。

【0026】RAM24は、前述したようにシステム制御部22の作業領域として使用されるランダムアクセスメモリである。なお、RAM24は、図示しないバックアップ用回路によりバックアップされており、装置電源遮断時にも記憶内容は保持される。

【0027】スキャナ25は、3.85本/mm、7.7本/mm、15.4本/mm等の所定の読み取り線密度で原稿画像を読み取って画情報を得るためのものである。プロッタ26は、受信した画情報を、その線密度に応じて記録出力したり、スキャナ5で読み取った画情報を、その線密度に応じて記録出力（コピー動作）するためのものである。

【0028】画像メモリ27は、スキャナ25で読み取った画情報を、メモリ送信するために一時的にファイルとして蓄積したり、受信した画情報を、プロッタ26により記録するまでファイルとして一時的に蓄積したり、通信管理レポート等の各種レポートの画情報やワンタッチダイヤル登録リストや短縮ダイヤル登録リストの画情報をフォント展開して作成するための一時的な記憶領域としても使用される。

【0029】符号化復号化部28は、送信画像データを、G3ファクシミリに適合する、MH符号化方式、MR符号化方式、MMR符号化方式等の所定の符号化方式で符号化圧縮する一方、受信画像データをMH符号化方式、MR符号化方式、MMR符号化方式等に対応する所定の復号化方式で復号伸長するものである。

【0030】操作表示部29は、図示していないが、相手先ファクシミリ番号を指定するためのテンキー、送信スタートキー、ワンタッチダイヤルキー、及び、その他各種キーが配設される一方、液晶表示装置等の表示器を備え、ユーザに知らせるべき装置の動作状態や、各種メッセージを表示するものである。

【0031】モデム30は、G3ファクシミリモデムであり、送信データを変調する一方、受信信号を復調するものである。また、モデム30は、入力されたダイヤル番号に対応してDTMF信号の送出も行う。なお、モデム30は、送信データ変調と受信信号の復調を同時に見え、モデム30単体では、送信と受信とを同時処理することができる。

【0032】網制御部31は、電話回線40に接続され

て、回線の直流ループの閉結・解放や、回線の極性反転の検出、回線解放の検出、発信音の検出、ビジートーン（話し中）等のトーン信号の検出、呼出信号の検出等の回線との接続制御や、ダイヤルパルスの生成を行うものである。また、網制御部31には、ハンドセット34が接続されて、網制御部31は、ハンドセット34のオン／オフフックの制御や、電話回線40等との切替制御をも行う。なお、網制御部31と、モデム31とは、システムバスを介さずに通信信号を直接やりとりし、また、

10 網制御部31と、後述するコードレス送受信部32とは、システムバス33を介さずに通信信号を直接やりとりする。

【0033】コードレス送受信部32は、アンテナ32aを備え、システム制御部22から与えられる通知情報や、網制御部31からの信号をアンテナ32aにより、無線で送信する一方、アンテナ32aにより受信した通知情報をシステム制御部22に通知したり、受信した信号を網制御部31に出力するためのものである。コードレス送受信部32は、他装置、すなわち、例えば、自装置としてのファクシミリ装置1から見た場合に、ファクシミリ装置2、3または4の各ファクシミリ装置との間で、無線通信を行える。システムバス33は、上記各部がデータをやり取りするための信号ラインである。

【0034】図3に、網制御部31の概略構成を示す。

【0035】同図において、網制御部31には、電話回線40からの加入者回線が自回線として収容されていて、スイッチS1に接続され、システム制御部22の制御により、ハンドセット34、モデム30（受信）、モデム30（送信）、または、コードレス送受信部32

30 （仮想他回線）のいずれかに切替接続される。直量検出部31aは、自回線の直流ループの開閉状態を検出するものであり、着信検出部31bは、電話回線40から自回線に到来する呼び出し信号を検出して着信を検出するものである。

【0036】スイッチS3、S4、S5、及び、S6は、それぞれ、ハンドセット34、モデム30（受信）、モデム30（送信）、及び、コードレス送受信部32（仮想他回線）がそれぞれオフフックされた場合に、システム制御部22により制御により、閉結され、オンフックされた場合に、解放されるものである。

【0037】ライントランステンスT1、T2、及び、T3は、それぞれ、モデム30（受信）、モデム30（送信）、及び、コードレス送受信部32（仮想他回線）と、回線40との間の直流ループ保持を行うためのものである。なお、ハンドセット34においては、ハンドセット34側で直流ループが保持される。

【0038】スイッチS2は、システム制御部22の制御により、コードレス送受信部32（仮想他回線）を、ハンドセット34、モデム30（受信）、または、モデム30（送信）のうちのいずれかに選択的に接続する

か、または、いずれにも接続しないためのものである。

【0039】また、各ファクシミリ装置は、図4ないし図7に示すように、RAM24に、装置間転送管理テーブル24aを予め記憶している。

【0040】図4は、ファクシミリ装置1における装置間転送管理テーブル24aの内容を示している。

【0041】同図において、テーブルは、各ファクシミリ装置(回線)1(L1)、2(L2)、3(L3)、及び、4(L4)についてのレコードにより構成されている。そして、各レコードは、「識別番号」、「自機」、「優先他機(他回線)」、及び「ID」の各フィールドにより構成されている。

【0042】「識別番号」は、各装置を識別するための番号である、「自機」は、値1が自装置であることを示し、値0が他装置であることを示す。図4ではファクシミリ装置1が自装置であるため、FAX1に対応するレコードの「自機」が値1で、それ以外のレコードの「自機」が値0となっている。「優先他機(他回線)」は、自装置にとって、後述する仮想回線の接続を最も優先したい他装置を設定するもので、値1の装置が、自装置(この場合FAX1)にとっての優先他機に設定されていることを示していく、FAX4(L4)がFAX1にとっての優先他機(他回線)に設定されている。

【0043】「ID」は、各ファクシミリ装置間で、仮想回線を確立を依頼する際に通知する識別番号であると共に、その識別番号を他装置から通知された場合において、仮想回線の確立に応じる場合には、依頼元の装置に返す番号である。ファクシミリ装置1においては、ファクシミリ装置2との間に番号12が、ファクシミリ装置3との間に番号13が、ファクシミリ装置4との間に番号14が登録されている。

【0044】図5は、ファクシミリ装置2における装置間転送管理テーブル24aの内容を示している。

【0045】図5ではファクシミリ装置2が自装置であるため、FAX2に対応するレコードの「自機」が値1で、それ以外レコードの「自機」が値0となっている。「優先他機(他回線)」は、FAX4(L4)がFAX2にとっての優先他機(他回線)に設定されている。

「ID」は、ファクシミリ装置1との間に番号12が、ファクシミリ装置3との間に番号23が、ファクシミリ装置4との間に番号24が登録されている。

【0046】図6は、ファクシミリ装置3における装置間転送管理テーブル24aの内容を示している。

【0047】図6ではファクシミリ装置3が自装置であるため、FAX3に対応するレコードの「自機」が値1で、それ以外レコードの「自機」が値0となっている。

「優先他機(他回線)」は、FAX4(L4)がFAX3にとっての優先他機(他回線)に設定されている。

「ID」は、ファクシミリ装置1との間に番号13が、ファクシミリ装置2との間に番号23が、ファクシミリ

装置4との間に番号34が登録されている。

【0048】図7は、ファクシミリ装置4における装置間転送管理テーブル24aの内容を示している。

【0049】図7ではファクシミリ装置4が自装置であるため、FAX4に対応するレコードの「自機」が値1で、それ以外レコードの「自機」が値0となっている。

「優先他機(他回線)」は、設定されていない。「ID」は、ファクシミリ装置1との間に番号14が、ファクシミリ装置2との間に番号24が、ファクシミリ装置3との間に番号34が登録されている。

【0050】図8に、各ファクシミリ装置1、2、3及び4が、他装置との間でコードレス送受信部32を介して情報を通知しあう場合の情報フォーマットについて示す。同図において、通知情報は、他機(他回線)識別番号と自機(自回線)識別番号とを伴って通知され、通知先と通知元が特定される。

【0051】次に以上のように構成され各ファクシミリ装置1、2、3及び4における処理手順について説明する。

【0052】先ず、図9において、各ファクシミリ装置のシステム制御部22は、自機送信または自機通話が起動されたかを監視する(判断101のNoループ)。なお、自機送信は、自装置のスキャナ25に原稿がセットされて、操作表示部29から送信宛先の電話番号が指定された送信スタートキーが押下されることにより起動され、自機通話は、ハンドセット34がオフフックされることにより起動される。

【0053】そして、自機送信または自機通話が起動されると(判断101のYes)、他機に代行送信依頼中であるかを判断する(判断102)。なお、代行送信とは、後述するが、自回線を使用するのではなく、コードレス送受信部32を介して他装置に仮想接続された回線(他回線)を借用して行う送信である。

【0054】他機に代行送信依頼中でない場合は(判断102のNo)、更に、他機からの依頼に応じた代行受信中であるかを判断する(判断103)。なお、代行受信とは、後述するが、自回線に着信した通信を、コードレス送受信部32を介して他装置に仮想接続して、他装置に受信させることである。

【0055】他機から代行受信中でない場合は(判断104のNo)、更に、装置間転送管理テーブル4aに、優先他回線の設定があるかを判断し(判断104)、設定がある場合は(判断105のYes)、優先他回線の回線状態をコードレス送受信部32を介して問い合わせる(処理105)。なお、処理105ないし処理114に対応して、問い合わせ先の他装置においては、図11に示す処理手順が行われるが、その処理手順については、後述する。

【0056】そして、問い合わせの結果、優先他回線に空きがある場合は(判断106のYes)、装置間転送

管理テーブル4 aに登録されている、優先他回線に対応する他装置と自装置との間に設定されているIDをコードレス送受信部3 2を介して通知し(処理107)、その通知に応答して同一のIDが優先他回線に対応する他装置から返されて、IDがOKである場合は(判断108のYes)、代行送信の依頼が可能であることになるため、自機モデム3 0(送信)またはハンドセット3 4を、網制御部3 1のスイッチS 2を制御して、仮想他回線(コードレス送受信部3 2)に接続すると共に(処理109)、スイッチS 3またはスイッチS 5、及び、スイッチS 6を閉結して、仮想回線を、優先他回線に対応する他装置との間に確立し(処理110)、G3ファクシミリプロトコルに基づいたファクシミリ送信、または、ハンドセット3 4による音声通信(通話)を行う(処理111)。そして、自機モデム3 0(送信)による送信処理、または、ハンドセット3 4による通話が終了してオンフックされるまで処理111を継続し(判断112のNoループ)、終了すると(判断112のYes)、それまで仮想回線を確立していた他機にコードレス送受信部3 2を介して通信の終了を通知する(処理113)。

【0057】このようにして、コードレス送受信部3 2を介して自装置から起動された通信を優先他装置に転送して優先他回線を借用して送信または通話を行った後は、当該転送に係る情報である転送履歴情報を図18に示す転送履歴管理テーブル24 bに登録する。図18に示す転送履歴管理テーブル24 bは、RAM24に記憶されている。なお、転送履歴管理テーブル24 bについては、後述する。

【0058】さて、判断102において、他機に代行送信依頼中である場合(判断102のYes)、判断103において、他機から代行受信中である場合(判断103のYes)、判断104において、優先他回線の設定がない場合(判断104のNo)、判断106において、優先他回線に空きがない場合(判断106のNo)、または、判断108において、IDがOKでない場合(判断108のNo)、すなわち、他機に代行送信を依頼できない状態である場合は、図10に示す判断201以降の処理を行う。

【0059】図10の判断201において、自回線に空きがあるか、すなわち、ハンドセット3 4、モデム3 0(受信)、モデム3 0(送信)、または、コードレス送受信部3 2(仮想他回線)と自回線が接続されて通信中または通話中でないか判断し、自回線に空きがある場合は(判断201のYes)、更に、他機に代行送信中で、自装置の送信機能が使用できない状態であるかあるかを判断し(判断202)、他機に代行送信依頼中でない場合(判断202のYes)は、自装置の送信機能と、自回線を使用した、通常の送信を行えるため、自機モデム3 0(送信)またはハンドセット3 4を、網制御

部3 1のスイッチS 1を制御して、自回線に接続すると共に(処理204)、スイッチS 3またはスイッチS 5を閉結して、回線を確立し(処理205)、G3ファクシミリプロトコルに基づいたファクシミリ送信、または、ハンドセット3 4による音声通信(通話)を行う(処理206)。そして、自機モデム3 0(送信)による送信処理、または、ハンドセット3 4による通話が終了してオンフックされるまで(判断207のYes)、処理206を継続する(判断207のNoループ)。

10 【0060】判断201で自回線に空きがない場合(判断201のNo)、または、自回線に空きがあっても、他機に代行送信依頼中で、自装置の送信機能が空いていない場合は(判断201のYes、判断202のYes)、送信不可の旨を操作表示部2 9に表示出力したり、警告音を可聴出力することで、出力し(処理203)、現在送信または通話は行えない状態であることをユーザに通知する。

【0061】次に、図9の処理105ないし処理114に対応して、問い合わせ先の他装置において行われる、図11に示す処理手順について説明する。

20 【0062】図11において、各ファクシミリ装置1、2、3及び4のシステム制御部2 2は、コードレス送受信部3 2を介して自回線の状態の問い合わせがあるかを監視している(判断301のNoループ)。

【0063】そして、他装置における図9の処理105に対応して判断301がYesになると、自回線の状態を直流検出部3 1 aや、着信検出部3 1 bにより確認し(判断302)、自装置のモデム3 0やハンドセット3 4により使用されおらず、空いた状態であるかを判断する(判断303)。

【0064】空いている場合は(判断303のYes)、「あり」の旨をコードレス送受信部3 2を介して他装置に通知し(処理304)、空いていない場合は(判断303のNo)、「なし」の旨をコードレス送受信部3 2を介して他装置に通知する(処理305)。処理304及び305は、他装置における図9の判断106に対応している。

【0065】そして、図9の処理107に対応して、IDの通知があるかを監視し(判断306のNoループ)、通知があると(判断306のYes)、代行送信依頼元の他装置に対応して装置間転送管理テーブル4 aに登録していたIDと一致しているかを判断すると共に、自回線を、他装置から依頼された代行送信ために使用せてもよいかを判断することで、通知されたIDが代行送信の依頼を受諾できるOKなものであるかを判断する(処理307)。ここで、例えば、自装置が、他装置と比較して、利用される頻度や、着信の頻度が高いものである場合に、その旨を予め登録しておき、通知されたIDが、対応して自装置で記憶しているIDと一致する場合であっても、一致しないものとみなすこと可能

である。その場合、自回線を、自装置の送信機能または受信機能のために占有できる利点がある。

【0066】判断307で、代行送信依頼元から通知されたIDがOKではないと判断した場合は(判断307のNo)、IDを非通知とすることで、代行送信依頼を拒否して(処理308)、処理を終了する。

【0067】通知されたIDをOKと判断した場合は(判断307のYes)、対応して記憶していたIDを通知することで、代行送信依頼を受諾する(処理309)。処理308及び処理309は、他装置における図9の判断108に対応している。

【0068】処理309で代行送信依頼を受諾すると、自回線を、網制御部31のスイッチS1を制御して、仮想他回線(コードレス送受信部32)に接続すると共に(処理310)、スイッチS6を閉結して、仮想回線を、代行送信依頼元の他装置との間に確立し(処理311)、G3ファクシミリプロトコルに基づいたファクシミリ送信、または、ハンドセット34による音声通信(通話)を行わせる(処理312)。そして、他装置における図9の処理113により、終了通知がコードレス送受信部32を介してあるかを監視する(判断313のNoループ)。

【0069】そして、終了通知があり(判断313のYes)、コードレス送受信部32を介して他装置から代行送信を依頼されて転送されてきた通信が終了した後は、当該転送に係る情報である転送履歴情報を図18に示す転送履歴管理テーブル24bに登録する。図18に示す転送履歴管理テーブル24bは、RAM24に記憶されている。なお、転送履歴管理テーブル24bについては、後述する。

【0070】このように、各ファクシミリ装置1、2、3及び4が、図9及び図10、または、図11に示した処理手順を行うことで、自回線が空いていても、優先他回線が設定されていれば、その優先他回線を使用して自装置から起動された通信を行うことができ、自回線を温存して、着信に備えることが可能となる。また、代行送信を依頼された側の装置においては、無条件に自回線を他装置の代行送信のために使用させるのではなく、IDの判断により使用を制限できるため、必要以上に自回線が他装置に使用されて、自装置における通信に支障がでることを防止することも可能となる。

【0071】次に、各ファクシミリ装置1、2、3及び4における着信処理手順について、図12ないし図16を参照して説明する。

【0072】先ず12において、各ファクシミリ装置のシステム制御部22は、自回線への着信を着信検出部32bにより監視し(判断401のNoループ)、着信があった場合は(判断401のYes)、自機受信機能がOKであるか否か、すなわち、プロッタ26が用紙切れや紙詰まり、または、トナー切れ等により、受信画像デ

ータを記録不可能な状態であるか否か、または、モデル30の受信機能に障害が発生しているか否か等を判断する(判断402)。

【0073】そして、自機受信機能がOKである場合は(判断402)、更に、他機からの代行受信中であるかを判断し(判断403)、代行受信中でない場合は(判断403のNo)、自装置の受信機能が使用可能かつ空いているため、自機モデル30(受信)を、網制御部31のスイッチS1を制御して、自回線に接続すると共に(処理405)、スイッチS4を閉結して、回線を確立し(処理406)、G3ファクシミリプロトコルに基づいたファクシミリ受信を行う(処理407)。そして、自機送信(通話)が起動されるか、または、自機モデル30(受信)による受信処理が終了してオンフックされるかを監視しつつ(判断408のNo、判断409のNoループ)、処理407を繰り返す。

【0074】判断402で自機受信機能がOKではない場合(判断402のNo)は、図13の判断501に移行し、また、自回線に着信した通信を自装置の受信機能で受信中に、自機送信(通話)が起動された場合(判断408のYes)は、図15の判断501に移行する。

【0075】先ず、判断402で自機受信機能がOKではない場合は(判断402のNo)、図13の判断501において、他機に代行送信依頼中であるかを判断し、他機に代行送信依頼中である場合は(判断501のYes)、自機受信機能がOKではない状況で、かつ、コードレス送受信部32が代行送信のために使用中であることになるため、受信不可の旨を操作表示部29に表示出力したり、警告音を可聴出力することで、出力して(処理502)、現在受信は行えない状態であることをユーザに通知する。

【0076】他機に代行送信依頼中でない場合は(判断501のNo)、コードレス送受信部32は現在空いているため、更に、装置間転送管理テーブル4aに、優先他機の設定があるかを判断し(判断503)、設定がある場合は(判断503のYes)、優先他機受信機能の状態をコードレス送受信部32を介して問い合わせる(処理504)。なお、処理504ないし処理512に応じて、問い合わせ先の他装置においては、図17に示す処理手順が行われが、その処理手順については、後述する。

【0077】問い合わせの結果、優先他機が受信OKである場合は(判断505のYes)、装置間転送管理テーブル4aに登録されている、優先他機と自装置との間に設定されているIDをコードレス送受信部32を介して通知し(処理506)、その通知に応答して同一のIDが優先他機から返されて、IDがOKである場合は(判断507のYes)、代行受信の依頼が可能であることになるため、自回線を、網制御部31のスイッチS1を制御して、仮想他回線(コードレス送受信部32)

に接続と共に（処理508）、スイッチS6を閉結して、仮想回線を、優先他装置との間に確立し（処理509）、G3ファクシミリプロトコルに基づいたファクシミリ受信を行なわせる（処理510）。

【0078】そして、優先他装置のモデム30（受信）による受信処理が終了して、終了通知がコードレス送受信部32を介してあるまで処理510を継続し（判断511のNoループ）、終了通知があると（判断511のYes）、自回線に着信した通信をコードレス送受信部32を介して優先他装置に転送することによる代行受信における当該転送に係る情報である転送履歴情報を図18に示す転送履歴管理テーブル24bに登録する。図18に示す転送履歴管理テーブル24bは、RAM24に記憶されている。なお、転送履歴管理テーブル24bについては、後述する。

【0079】そして、自回線に着信した通信は他装置に転送されて他装置より受信された旨を、操作表示部29に表示出力したり、プロッタ26により記録出力出力することで、出力して（処理513）、本来自装置が受信するはずだった通信が他装置により受信されたことをユーザに通知する。

【0080】さて、判断503において、優先他回線の設定がない場合（判断503のNo）、判断505において、受信OKではない場合（判断505のNo）、または、判断507において、IDがOKでない場合（判断507のNo）、すなわち、優先他機に代行受信を依頼できない状態である場合は、図10に示す処理601以降の処理を行う。

【0081】図10の処理601において、優先他機以外の各他機の受信機能の状態をコードレス送受信部32を介して順次問い合わせる。なお、処理601ないし処理610に対応して、問い合わせ先の他装置においては、図17に示す処理手順が行われが、その処理手順については、後述する。

【0082】そして、問い合わせの結果、受信機能が正常で受信OKの他機が1以上ある場合は（判断602のYes）、受信OKの特定の他機について、装置間転送管理テーブル4aに登録されている、他機と自装置との間に設定されているIDをコードレス送受信部32を介して通知し（処理604）、その通知に応答して同一のIDが他機から返されて、IDがOKである場合は（判断605のYes）、代行受信の依頼が可能であることになるため、処理606に移行する。

【0083】当該他機についてはIDがOKではない場合は（判断605のNo）、次の受信OKの他機について、判断602、処理604及び判断605を繰り返し行い、受信機能が正常で、かつ、判断605でIDがOKと判断された、本当に受信OKの他機が1つもない場合（判断602のNo）は、自機受信機能がOKではない状況で、かつ、代行受信を依頼できる他機がない

ことになるため、受信不可の旨を操作表示部29に表示出力したり、警告音を可聴出力することで、出力して（処理603）、現在受信は行えない状態であることをユーザに通知する。

【0084】判断605において、IDがOKで（判断605のYes）、代行受信の依頼が可能である場合は、自回線を、網制御部31のスイッチS1を制御して、仮想他回線（コードレス送受信部32）に接続すると共に（処理606）、スイッチS6を閉結して、仮想他回線を、IDがOKであると通知してきた他装置との間に確立し（処理607）、G3ファクシミリプロトコルに基づいたファクシミリ受信を行なわせる（処理608）。

【0085】そして、他装置のモデム30（受信）による受信処理が終了して、終了通知がコードレス送受信部32を介してあるまで処理608を継続し（判断609のNoループ）、終了通知があると（判断609のYes）、自回線に着信した通信をコードレス送受信部32を介して他装置に転送することによる代行受信における当該転送に係る情報である転送履歴情報を図18に示す転送履歴管理テーブル24bに登録する。図18に示す転送履歴管理テーブル24bは、RAM24に記憶されている。なお、転送履歴管理テーブル24bについては、後述する。

【0086】そして、自回線に着信した通信は、他装置に転送されて受信された旨を、操作表示部29に表示出力したり、プロッタ26により記録出力出力することで、出力して（処理611）、本来自装置が受信するはずだった通信が他装置により受信されたことをユーザに通知する。

【0087】次に、図12において、自回線に着信した通信を自装置の受信機能で受信中に、自機送信（通話）が起動された場合（判断408のYes）に行われる、図15の判断701以降の処理手順について説明する。

【0088】図15の判断701において、他機に代行送信依頼中であるかを判断し、他機に代行送信依頼中である場合は（判断701のYes）、自装置の送信機能が空いていても、自回線が使用中で、かつ、コードレス送受信部32を介した代行送信は行えない状態であるため、送信不可の旨を操作表示部29に表示出力したり、警告音を可聴出力することで、出力し（処理702）、現在送信または通話は行えない状態であることをユーザに通知する。

【0089】他機に代行送信依頼中でない場合は（判断701のNo）、更に、装置間転送管理テーブル4aに、優先他回線の設定があるかを判断し（判断703）、設定がある場合は（判断703のYes）、優先他回線の回線状態をコードレス送受信部32を介して問い合わせる（処理704）。なお、処理704ないし処理713に対応して、問い合わせ先の他装置において

は、既に説明した図11に示す処理手順が行われる。

【0090】そして、問い合わせの結果、優先他回線に空きがある場合は(判断705のYes)、装置間転送管理テーブル4aに登録されている、優先他回線に対応する他装置と自装置との間に設定されているIDをコードレス送受信部32を介して通知し(処理706)、その通知に応答して同一のIDが優先他回線に対応する他装置から返されて、IDがOKである場合は(判断707のYes)、代行送信の依頼が可能であることになるため、自機モデム30(送信)またはハンドセット34を、網制御部31のスイッチS2を制御して、仮想他回線(コードレス送受信部32)に接続すると共に(処理708)、スイッチS3またはスイッチS5、及び、スイッチS6を閉結して、仮想回線を、優先他回線に対応する他装置との間に確立し(処理709)、G3ファクシミリプロトコルに基づいたファクシミリ送信、または、ハンドセット34による音声通信(通話)を行う(処理710)。そして、自機モデム30(送信)による送信処理、または、ハンドセット34による通話が終了してオフックされるまで処理710を継続し(判断711のNoループ)、終了すると(判断711のYes)、それまで仮想回線を確立していた他機にコードレス送受信部32を介して通信の終了を通知する(処理712)。

【0091】このようにして、コードレス送受信部32を介して自装置から起動された通信を優先他装置に転送して優先他回線を借用して送信または通話を行った後は、当該転送に係る情報である転送履歴情報を図18に示す転送履歴管理テーブル24bに登録する。図18に示す転送履歴管理テーブル24bは、RAM24に記憶されている。なお、転送履歴管理テーブル24bについては、後述する。

【0092】さて、判断703において、優先他回線の設定がない場合(判断703のNo)、判断705において、優先他回線に空きがない場合(判断705のNo)、または、判断707において、IDがOKでない場合(判断707のNo)、すなわち、優先他機に代行送信を依頼できない状態である場合は、図16に示す処理801以降の処理を行う。

【0093】図16の処理801において、優先他機以外の各他機の他回線の状態をコードレス送受信部32を介して順次問い合わせる。なお、処理801ないし処理811に対応して、問い合わせ先の他装置においては、既に説明した図11に示す処理手順が行われる。

【0094】そして、問い合わせの結果、他回線が空いている他機が1以上ある場合は(判断801のYes)、他回線が空いてる特定の他機について、装置間転送管理テーブル4aに登録されている、他機と自装置との間に設定されているIDをコードレス送受信部32を介して通知し(処理804)、その通知に応答して同一

のIDが他機から返されて、IDがOKである場合は(判断805のYes)、代行送信の依頼が可能であることになるため、処理806に移行する。

【0095】当該他機についてはIDがOKではない場合は(判断805のNo)、次の他回線が空いている他機について、判断802、処理804及び判断805を繰り返し行い、他回線が空いていて、かつ、判断805でIDがOKと判断された、本当に他回線を使用できる他機が1つもない場合(判断802のNo)は、自回線が受信のために使用できない状況で、かつ、代行送信を依頼できる他機がないことになるため、受信不可の旨を操作表示部29に表示出力したり、警告音を可聴出力することで、出力して(処理803)、現在受信は行えない状態であることをユーザに通知する。

【0096】判断805において、IDがOKで(判断805のYes)、代行送信の依頼が可能である場合は、自機モデム30(送信)またはハンドセット34を、網制御部31のスイッチS2を制御して、仮想他回線(コードレス送受信部32)に接続すると共に(処理806)、スイッチS3またはスイッチS5、及び、スイッチS6を閉結して、仮想回線を、優先他回線に対応する他装置との間に確立し(処理807)、G3ファクシミリプロトコルに基づいたファクシミリ送信、または、ハンドセット34による音声通信(通話)を行う(処理808)。そして、自機モデム30(送信)による送信処理、または、ハンドセット34による通話が終了してオフックされるまで処理808を継続し(判断809のNoループ)、終了すると(判断809のYes)、それまで仮想回線を確立していた他機にコードレス送受信部32を介して通信の終了を通知する(処理810)。

【0097】このようにして、コードレス送受信部32を介して自装置から起動された通信を優先他装置に転送して優先他回線を借用して送信または通話を行った後は、当該転送に係る情報である転送履歴情報を図18に示す転送履歴管理テーブル24bに登録する。図18に示す転送履歴管理テーブル24bは、RAM24に記憶されている。なお、転送履歴管理テーブル24bについては、後述する。

【0098】次に、図13の処理504ないし処理512、及び、図14の処理601ないし処理610に対応して、問い合わせ先の他装置において行われる、図17に示す処理手順について説明する。

【0099】図17において、各ファクシミリ装置1、2、3及び4のシステム制御部22は、コードレス送受信部32を介して自装置の受信機能の状態の問い合わせがあるかを監視している(判断901のNoループ)。

【0100】そして、他装置における図13の処理504または図14の処理601に対応して判断901がYesになると、自装置のプロッタ26の状態やモデム3

0の受信機能をチェックすることにより、受信状態を確認し（判断902）、自装置が受信OKの状態であるかを判断する（判断903）。

【0101】受信OKである場合は（判断903のYes）、「OK」の旨をコードレス送受信部32を介して他装置に通知し（処理904）、受信OKでない場合は（判断903のNo）、「NG」の旨をコードレス送受信部32を介して他装置に通知する（処理905）。処理904及び905は、他装置における図13の判断505または図14の判断602に対応している。

【0102】そして、図13の処理506または図14の処理604に対応して、IDの通知があるかを監視し（判断906のNoループ）、通知があると（判断906のYes）、代行受信依頼元の他装置に対応して装置間転送管理テーブル4aに登録していたIDと一致しているかを判断すると共に、自装置の受信機能を、他装置から依頼された代行受信ために使用させてよいかを判断することで、通知されたIDが代行受信の依頼を受諾できるOKなものであるかを判断する（処理907）。ここで、例えば、自装置が、他装置と比較して、利用される頻度や、着信の頻度が高いものである場合に、その旨を予め登録しておき、通知されたIDが、対応して自装置で記憶しているIDと一致する場合であっても、一致しないものとみなすこととも可能である。その場合、自装置の受信機能を、自回線に着信した通信のために温存することが可能となる利点がある。

【0103】判断907で、代行受信依頼元から通知されたIDがOKではないと判断した場合は（判断907のNo）、IDを非通知とすることで、代行受信依頼を拒否して（処理908）、処理を終了する。

【0104】通知されたIDをOKと判断した場合は（判断907のYes）、対応して記憶していたIDを通知することで、代行受信依頼を受諾する（処理909）。処理908及び処理909は、他装置における図13の判断507または図14における判断605に対応している。

【0105】処理909で代行送信依頼を受諾すると、自装置のモデム30（受信）を、網制御部31のスイッチS2を制御して、仮想他回線（コードレス送受信部32）に接続すると共に（処理310）、スイッチS6を閉結して、仮想回線を、代行受信依頼元の他装置との間に確立し（処理911）、G3ファクシミリプロトコルに基づいたファクシミリ受信を行う（処理912）。受信が終了すると（判断913のYes）、代行受信依頼元の他装置に受信処理の終了を通知する（処理914）。処理914は、他装置における図13の判断511または図14の判断609に対応している。

【0106】そして、コードレス送受信部32を介して他装置から代行受信を依頼されて転送されてきた通信が終了した後は、当該転送に係る情報である転送履歴情報

を図18に示す転送履歴管理テーブル24bに登録する。図18に示す転送履歴管理テーブル24bは、RAM24に記憶されている。なお、転送履歴管理テーブル24bについては、後述する。

【0107】このように、各ファクシミリ装置1、2、3及び4が、図12ないし図16、または、図17に示した処理手順を行うことで、自装置の受信機能に障害があって自回線に着信した通信を装置で処理できない場合には、他装置に代行受信させることができる。また、代行受信を依頼された側の装置においては、無条件に自装置の受信機能を他装置の代行受信のために使用させるのではなく、IDの判断により使用を制限できるため、必要以上に自装置の受信機能が他装置に使用されて、自装置における通信に支障がでることを防止することも可能となる。また、自回線が空いていない場合に、自機送信や自機通話が起動されても、他回線を使用して、それら起動された通信に対応することができる。

【0108】以上説明したように、本実施の形態に係るファクシミリ装置は、他装置との間で、自回線、自装置の送信機能及び受信機能を相互に利用しあうことで、通信資源の有効活用が可能となり、全体として、各装置が通信不可能な状態になる機会を低減することができ、ユーザの利便性を高めることができる。

【0109】最後に、図11の処理314、図13の処理512、図14の処理610、図15の処理713、図16の処理811、または、図17の処理915において、図18の転送履歴管理テーブルに順次登録される転送履歴情報について説明する。

【0110】図18において、各転送履歴情報にはファイル番号が付され、各ファイル番号に対応する転送管理情報は、各転送に係る通信が行われた「日付」及び「時刻」、送信または受信の別を示す「送信／受信」、各転送に係る通信において使用された装置を示す「使用装置」、各転送に係る通信において使用された回線を示す「使用回線」、各転送に係る通信に要した時間を示す「通信時間」の各フィールドによる構成されている。なお、「使用装置」及び「使用回線」のフィールドにおける番号は、各装置に付された番号及び各装置に接続された回線に付された番号を示している。

【0111】そのように、順次転送履歴情報が登録される転送履歴管理テーブル24bの内容は、一定時間が経過する毎に、一定件数が蓄積される毎に、または、操作表示部29からの強制出力の指示入力により、システム制御部22がROM23のフォントテーブル23aを参照しつつ、図19に示すような転送履歴管理レポートのフォーマットに変換して、プロッタ26により記録紙に記録して出力したり、操作表示部29の表示器に表示する。

【0112】これにより、ユーザは、自分が管理している装置（自機）が関わった代行送信または代行受信に係

る装置間の転送の履歴を知ることができ、部門間の料金管理のため等に活用することが可能となる。

【0113】なお、以上説明した実施の形態においては、主に画像情報の通信を行う通信端末装置であるファクシミリ装置に本発明を適用したが、本発明は、それに限らず、その他の種別のデータの通信を行う通信端末装置に対しても、同様に適用可能なものである。

【0114】

【発明の効果】請求項1に係る発明によれば、自装置に着信した通信を、他装置に代行受信させることができる一方、他装置に着信した通信を、自装置が代行受信できるため、本発明に係る、複数の通信端末装置が共働して、各通信端末装置の受信機能及び各通信端末装置に接続された回線を有効に利用でき、ハードウェア資源を有効活用することが可能となる効果が得られる。

【0115】請求項2に係る発明によれば、自装置から起動された通信を、他装置に接続された他回線を使用して行うことができる一方、他装置から起動された通信を、自回線を使用させて行わせることができるために、本発明に係る、複数の通信端末装置が共働して、各通信端末装置に接続された回線及び各通信端末装置の送信機能を有効に利用でき、ハードウェア資源を有効活用することが可能となる効果が得られる。

【0116】請求項3に係る発明によれば、代行受信を依頼する側と、依頼される側とで、識別情報が一致した場合にだけ代行受信が行われるため、比較的使用頻度が高い通信端末装置が代行受信を依頼された場合に、その依頼を拒否して、自装置の受信機能が必要以上に他装置に使用されてしまって、自装置本来の通信が行えなくなってしまうことを防止することが可能となる効果が得られる。

【0117】請求項4に係る発明によれば、他回線の使用を依頼する側と、依頼される側とで、識別情報が一致した場合にだけ他回線を使用した（自回線を使用させた）通信が行われるため、比較的使用頻度が高い通信端末装置が、自回線の借用を依頼された場合に、その依頼を拒否して、自回線が必要以上に他装置に使用されてしまって、自装置本来の通信が行えなくなってしまうことを防止することが可能となる効果が得られる。

【0118】請求項5に係る発明によれば、前記優先他装置が設定されている場合に、自回線に着信した通信をその優先他装置に代行受信依頼するため、比較的使用頻度の低い装置を優先他装置と設定することで、自装置の受信機能を温存することが可能となる効果が得られる。

【0119】請求項6に係る発明によれば、前記優先他装置が設定されている場合に、その優先他装置に接続された他回線の借用を依頼するため、比較的使用頻度の高い通信端末装置が、比較的使用頻度の低い装置を優先他装置と設定することで、自回線を温存して、自回線に着信する通信を優先させることができ、受信漏れを未然に

防ぐことができる効果が得られる。

【0120】請求項7に係る発明によれば、他装置のうちの代行受信可能なものを検索する空き他装置検索手段を備えているため、ユーザがわざわざ、代行受信可能な他装置を調べて指定する手間を省くことができる効果が得られる。

【0121】請求項8に係る発明によれば、他装置のうちの他回線を借用可能なものを検索する空き他回線検索手段を備えているため、ユーザがわざわざ、他回線を借用できる他装置を調べて指定する手間を省くことができ、通常と同じ操作で通信を行えるという効果が得られる。

【0122】請求項9に係る発明によれば、前記自回線着信通信転送手段は、自装置に接続された自回線に着信があった場合において、自装置が受信不可状態のときに、前記コードレス送受信手段を介して他装置に代行受信を依頼するため、自装置が受信不可能な場合に、着信に応答しないで、通信が行えない事態を防止することができる効果が得られる。

10 【0123】請求項10に係る発明によれば、自回線に着信した通信が他装置に代行受信された旨を出力する出力手段を更に備えているため、自装置を使用するユーザに対して、本来自装置が受信するはずだった通信が、他装置に代行受信されたことを通知でき、ユーザの使い勝手が向上する効果が得られる。

20 【0124】請求項11に係る発明によれば、前記自回線着信通信転送手段により、自回線に着信した通信が他装置により代行受信された場合、または、前記他回線着信通信代行受信手段により他回線に着信した通信を代行受信した場合に、それら各通信に関連して得られる情報を転送履歴管理情報として記憶し、その転送履歴管理情報に基づいて転送履歴管理レポートを出力するため、自装置が関わった代行受信についての情報をユーザに明示でき、部門間の通信料金管理等を容易に行うことが可能となる効果が得られる。

30 【0125】請求項12に係る発明によれば、前記自装置起動通信転送手段により、自装置から起動された通信が他回線を使用して行われた場合、または、前記他装置起動通信中継手段により、他装置から起動された通信が自回線を使用させて行われた場合に、それら各通信に関連して得られる情報を転送履歴管理情報とし、その転送履歴管理情報に基づいて転送履歴管理レポートを出力するため、自装置が関わった中継通信についての情報をユーザに明示でき、部門間の通信料金管理等を容易に行うことが可能となる効果が得られる。

【図面の簡単な説明】

【図1】本発明の実施の形態に係る、複数のファクシミリ装置の配置構成について模式的に示す図である。

40 【図2】本発明の実施の形態に係るファクシミリ装置の構成を示す図である。

【図3】本発明の実施の形態にファクシミリ装置の網制御部の概略構成について示す図である。

【図4】装置間転送管理テーブルについて示す図である。

【図5】装置間転送管理テーブルについて示す図である。

【図6】装置間転送管理テーブルについて示す図である。

【図7】装置間転送管理テーブルについて示す図である。

【図8】装置間でやりとりされる通知情報の形式について示す図である。

【図9】本発明の実施の形態に係るファクシミリ装置における処理手順について示す図である。

【図10】図9と共に、本発明の実施の形態に係るファクシミリ装置における処理手順について示す図である。

【図11】本発明の実施の形態に係るファクシミリ装置における処理手順について示す図である。

【図12】本発明の実施の形態に係るファクシミリ装置における処理手順について示す図である。

【図13】図12と共に本発明の実施の形態に係るファクシミリ装置における処理手順について示す図である。

【図14】図12及び図13と共に本発明の実施の形態に係るファクシミリ装置における処理手順について示す図である。

【図15】図12、図13及び図14と共に本発明の実施の形態に係るファクシミリ装置における処理手順について示す図である。

【図16】図12、図13、図14及び図15と共に本

発明の実施の形態に係るファクシミリ装置における処理手順について示す図である。

【図17】本発明の実施の形態に係るファクシミリ装置における処理手順について示す図である。

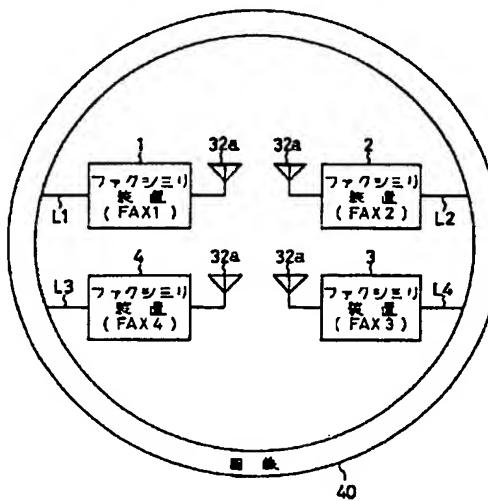
【図18】転送履歴管理テーブルについて示す図である。

【図19】転送履歴管理レポートについて示す図である。

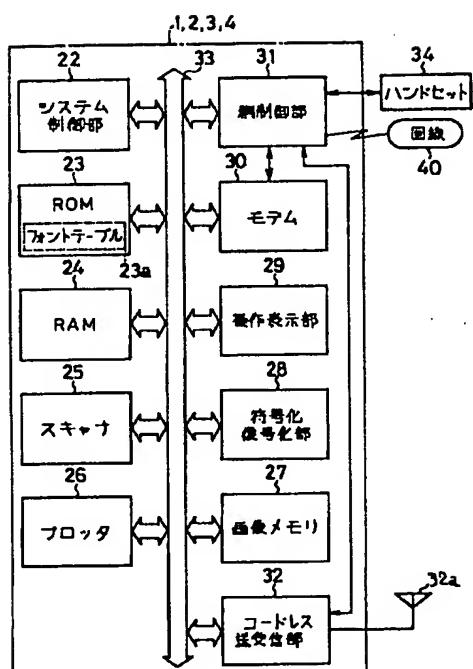
【符号の説明】

10	1、2、3、4 ファクシミリ装置
	2 2 システム制御部
	2 3 ROM
	2 3 a フォントテーブル
	2 3 b 転送履歴管理テーブル
	2 4 RAM
	2 5 スキヤナ
	2 6 プロッタ
	2 7 画像メモリ
	2 8 符号化復号化部
20	2 9 操作表示部
	3 0 モデム
	3 1 網制御部
	3 1 a 直流検出部
	3 1 b 着信検出部
	4 0 回線
	L 1、L 2、L 3、L 4 各装置の自回線
	S 1、S 2、S 3、S 4、S 5、S 6 スイッチ
	T 1、T 2、T 3 ライントランス

【図1】



【図2】



【図4】

24a

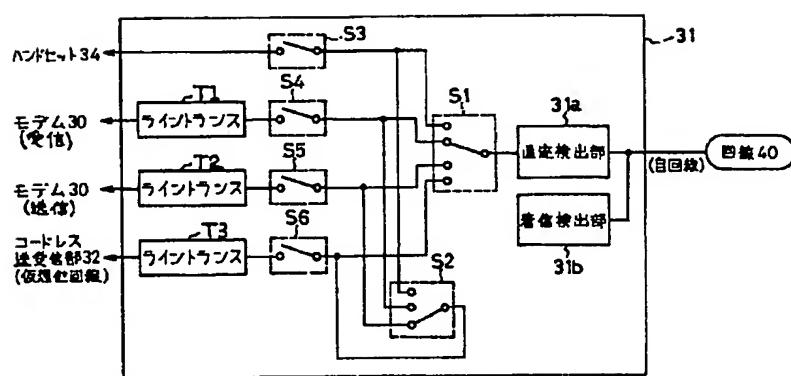
機直間転送管理子-アル (FAX1)				
機種 (回線)	識別番号	自機	優先化機 (他回線)	ID
				1 2 3 4
FAX1 (L1)	1	1	0	12 13 14
FAX2 (L2)	2	0	0	
FAX3 (L3)	3	0	0	
FAX4 (L4)	4	0	1	12 13 14

【図5】

24a

機直間転送管理子-アル (FAX2)				
機種 (回線)	識別番号	自機	優先化機 (他回線)	ID
				1 2 3 4
FAX1 (L1)	1	0	0	
FAX2 (L2)	2	1	0	12 23 24
FAX3 (L3)	3	0	0	
FAX4 (L4)	4	0	1	12 13 14

【図3】



【図8】

回線 (他回線) 識別番号	自機 (自回線) 識別番号	通知
00300169,s01,b(2),k(14)		

【図6】

24a

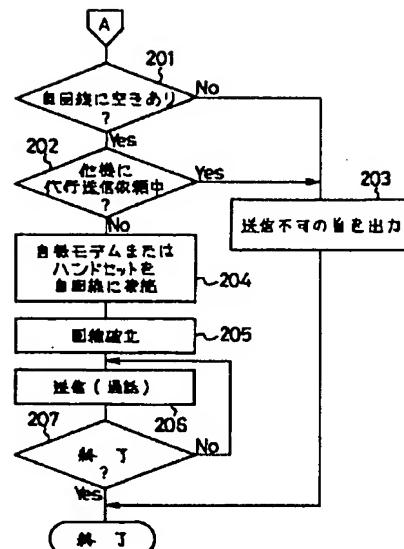
接続間断並管理データーブル (FAX3)				ID
接続 (回線)	識別番号	自機	優先仕様 (回線)	
				1 2 3 4
FAX1(L1)	1	0	0	X X X X
FAX2(L2)	2	0	0	X X X X
FAX3(L3)	3	1	0	13 23 X 34
FAX4(L4)	4	0	1	X X X X

【図7】

24a

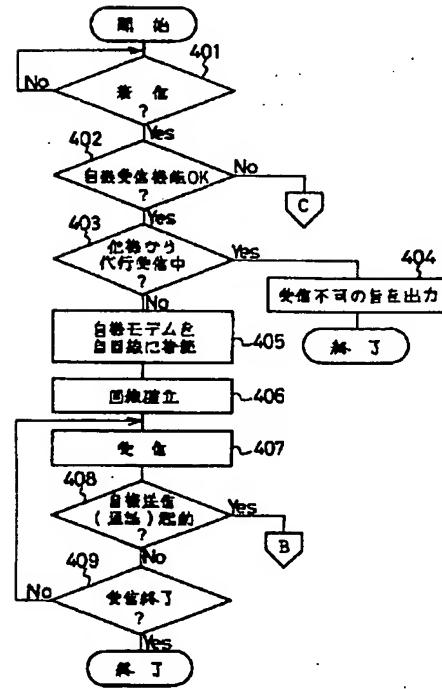
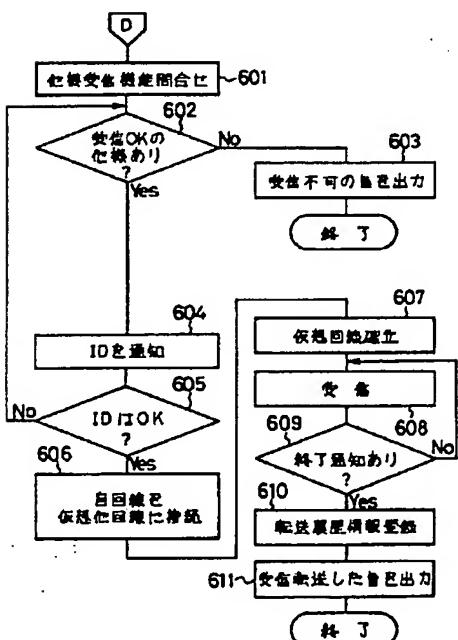
接続間断並管理データーブル (FAX4)				ID
接続 (回線)	識別番号	自機	優先仕様 (回線)	
				1 2 3 4
FAX1(L1)	1	0	0	X X X X
FAX2(L2)	2	0	0	X X X X
FAX3(L3)	3	0	0	X X X X
FAX4(L4)	4	1	0	14 24 34

【図10】

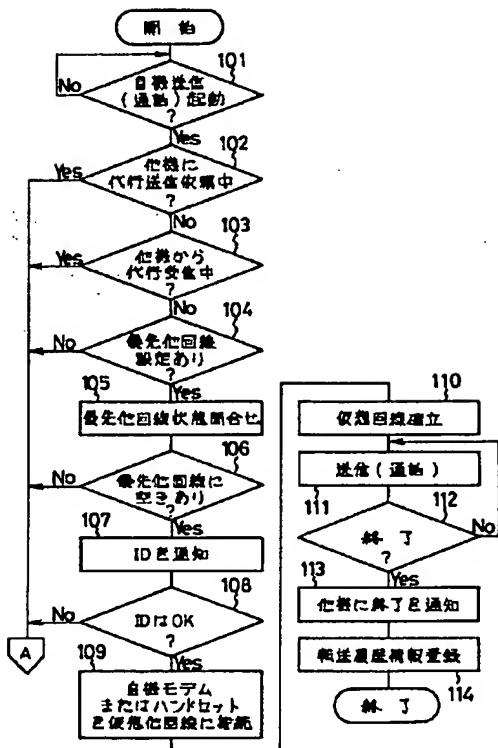


【図12】

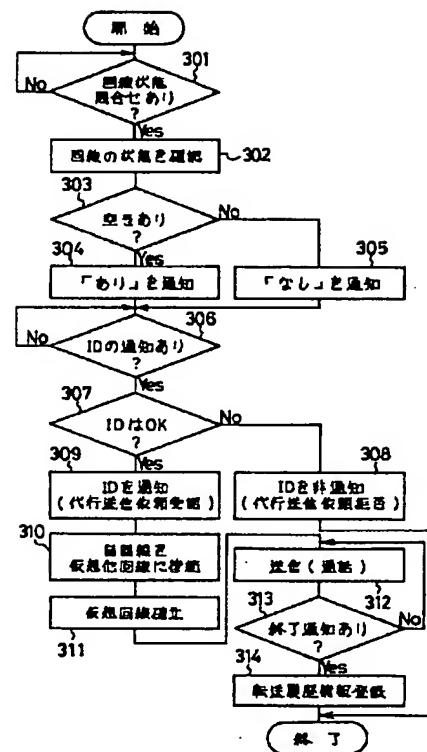
【図14】



【図9】



【図11】

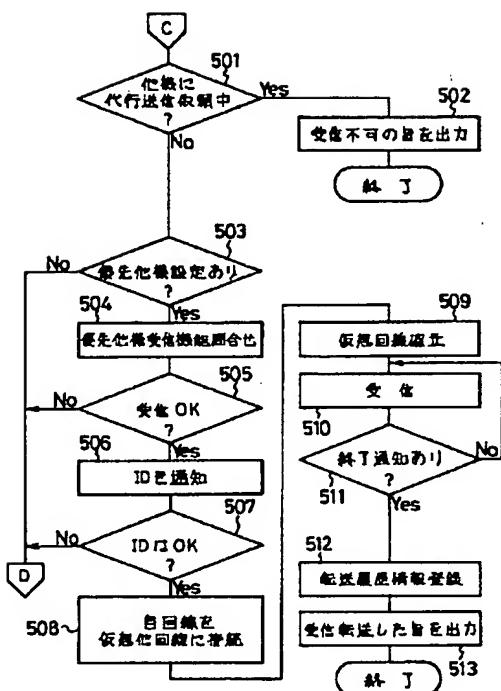


【図18】

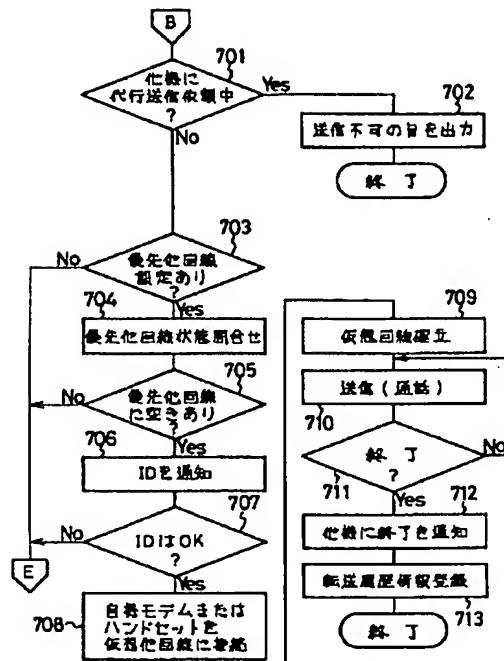
24b

転送履歴管理テーブル						
日付	時刻	送信 / 受信	使用装置	使用回線	通話時間	ファイル番号
05/27	9:25	送信	2	4	35 秒	0017
05/27	13:52	送信	3	2	27 秒	0018
05/28	10:12	受信	2	1	58 秒	0019
05/28	15:15	受信	3	2	45 秒	0020
:	:	:	:	:	:	:

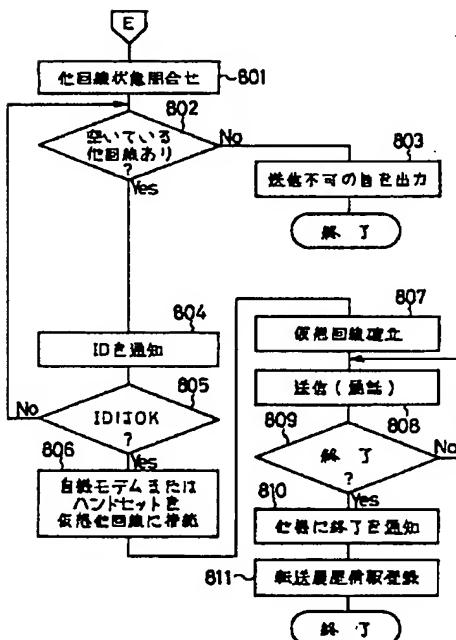
【図13】



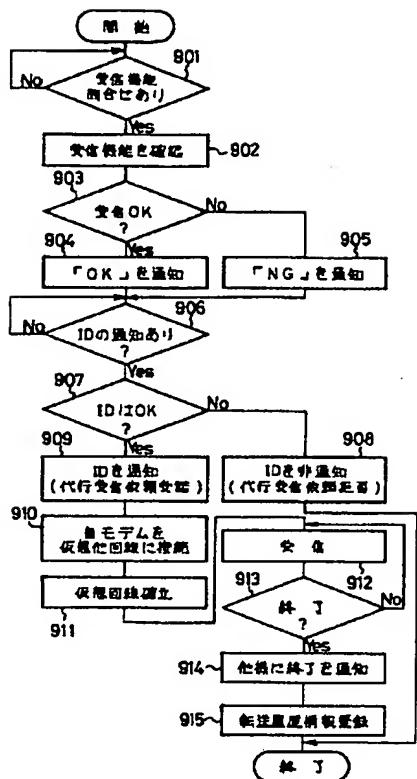
【図15】



【図16】



【図17】



【図19】

*****転送履歴管理レポート*****						
日付	時刻	送信/受信	使用装置	使用回線	送信時間	ファイル番号
05/27	9:25	送信	自機	他機(4)	35秒	0017
05/27	13:52	送信	他機(3)	自機	27秒	0018
05/28	10:12	受信	自機	他機(3)	58秒	0019
05/28	15:15	受信	他機(3)	自機	45秒	0020

Japanese Patent Application Laid-Open No. 11-196195

(54) [TITLE OF THE INVENTION] COMMUNICATION TERMINAL DEVICE

(57) [ABSTRACT]

[PROBLEM] To provide a communication terminal device that enables making an effective use of its own line that has been connected, its own transmission function, and its own reception function, thereby making an effective use of hardware resources.

[SOLVING MEANS] A communication terminal device is characterized by comprising cordless transmission/reception means that performs wireless communication with another device, whereby, in a case where a communication has arrived at a line of the user's managing user's own device, the user's managing user's own device requests the other device to perform proxy reception via the cordless transmission/reception means as occasion demands, and virtual connection is made between the other device having accepted that request and the user's managing user's own device's line via the cordless transmission/reception means to thereby cause the other device to perform proxy reception of the communication that has come into the user's managing user's own device's line.

[WHAT IS CLAIMED IS]

[Claim 1] A communication terminal device, the communication terminal device being adapted to perform a communication via a line, characterized by comprising cordless transmission/reception means that performs wireless communication with another device, user's self's line arrival

communication transfer means that, in a case where a communication has arrived at a line connected to the user's managing user's own device, permits the user's managing user's own device to request the other device to perform a proxy reception via the cordless transmission/reception means as occasion demands and causes virtual connection to be made between the other device having accepted that request and the user's managing user's own device's line via the cordless transmission/reception means to thereby cause the other device to perform proxy reception of the communication that has come into the user's self's line, and another-device's line arrival communication proxy reception means that, when proxy reception is requested from the other device via the cordless transmission/reception means, permits the user's self's device to accept that request to perform virtual connection between another line connected to the other device and the user's self's device via the cordless transmission/reception means and thereby perform proxy reception of the communication that has arrived at the other line.

[Claim 2] A communication terminal device, the communication terminal device being adapted to perform a communication via a line, characterized by comprising cordless transmission/reception means that performs wireless communication with another device, user's self's device started communication transfer means that, in a case where a communication has been started from the user's self's device, permits the user's self's device to request the other device

to lend the other line connected to the other device via the cordless communication means as occasion demands to thereby perform virtual connection between the other line connected to the other device having accepted that request and the user's self's device via the cordless transmission/reception means and thereby perform, by using the other line, the communication that has been started from the user's self's device, and another-device started communication relay means that, when a request is made from the other device for it to use the user's self's line connected to the user's self's device via the cordless transmission/reception means, permits the user's self's device to accept that request to thereby perform virtual connection between the user's self's line and the other device via the cordless transmission/reception means and thereby cause the other device to perform the communication started from the other device by causing the other device to use the user's self's line.

[Claim 3] A communication terminal device according to claim 1, characterized in that the user's self's line arrival communication transfer means, when requesting the other device to perform proxy reception via the cordless transmission/reception means, notifies to the other device prescribed identification information that corresponds to the other device and that was stored beforehand; and, on the other hand, the another-device's line arrival communication proxy reception means, when receiving from the other device a request for the user's self's device to perform proxy reception via the

cordless transmission/reception means, collates identification information that has been notified together, with identification information that corresponds to the other device and that was stored beforehand, as occasion demands, whereby, only when the both have coincided with each other, the another-device's line arrival communication proxy reception means accepts that request to thereby perform virtual connection between the other device's line connected to the other device and the user's self's device via the cordless transmission/reception means and thereby perform proxy reception of the communication that has arrived at the other device's line.

[Claim 4] A communication terminal device according to claim 2, characterized in that the user's self's device started communication transfer means, when requesting the other device to lend the other device's line connected to that other device via the cordless communication means, notifies to the other device prescribed identification information that corresponds to the other device and that was stored beforehand; and, on the other hand, the another-device started communication relay means, when a request is made from the other device for the user's self's device to lend the user's self's line connected to the user's self's device via the cordless transmission/reception means, collates the identification information that has been notified together, with identification information that corresponds to the other device and that was stored beforehand, as occasion demand, whereby, only when the both have coincided

with each other, the another-device started communication relay means accepts that request to thereby perform virtual connection between the user's self's line and the other device via the cordless transmission/reception means and thereby cause the other device to perform the communication started from the other device through the use of the user's self's line.

[Claim 5] A communication terminal device according to one of claims 1 and 3, characterized by further comprising another device of priority setting means that sets another device of priority as occasion demands, whereby, in a case where a communication reception has occurred on the user's self's device's line, when the other device of priority is already set, the user's self's line arrival communication transfer means requests the other device of priority to perform proxy reception via the cordless transmission/reception means.

[Claim 6] A communication terminal device according to one of claims 2 and 3, characterized by further comprising another device of priority setting means that sets another device of priority as occasion demands, whereby, in a case where a communication has been started from the user's self's device, when the other device of priority is set, the user's self's started communication transfer means requests the other device of priority to lend the other device's line connected to this other device.

[Claim 7] A communication terminal device according to one of claims 1, 3, and 5, characterized by further comprising another unoccupied device searching means that searches for another

device that, among the other devices, is able to perform proxy reception via the cordless transmission/reception means, whereby the user's self's device's line arrival communication transfer means requests the other device that the another unoccupied device searching means has searched for to perform proxy reception via the cordless transmission/reception means.

[Claim 8] A communication terminal device according to claims 1, 3, and 5, characterized by further comprising another unoccupied line searching means that, among the other devices, searches for a device the line of that can be lent via the cordless transmission/reception means, whereby the user's self's device started communication transfer means requests that other device that the another unoccupied line searching means has searched for and found out to lend the other device's line connected to that other device via the cordless transmission/reception means.

[Claim 9] A communication terminal device according to one of claims 1, 3, 5, and 7, characterized in that, in a case where a communication has occurred on the user's self's line connected to the user's self's device, when the user's self's device is in the state of being unable to receive, the user's self's line arrival communication transfer means requests the other device to perform proxy reception via the cordless transmission/reception means.

[Claim 10] A communication terminal device according to one of claims 1, 3, 5, 7, and 9, characterized by further comprising output means that, in a case where a communication that has come

into the user's self's line has been proxy-received by the other device through the use of the user's self's line arrival communication transfer means, outputs to the effect that the communication having arrived at the user's self's line has been proxy-received by the other device.

[Claim 11] A communication terminal device according to one of claims 1, 3, 5, 7, 9, and 10, characterized by further comprising managing information storage means that, in a case where a communication that has come into the user's self's line has been proxy-received by the other device through the use of the user's self's line arrival communication transfer means, or, in a case where a communication that has come into the other device's line has been proxy-received by the user's self's device through the use of the another-device's line arrival communication proxy reception means, stores the information obtained in association with those respective communications as transfer history managing information, and report output means that outputs a transfer history managing report according to the transfer history managing information that the managing information storage means stores therein.

[Claim 12] A communication terminal device according to one of claims 2, 4, 6, and 8, characterized by further comprising managing information storage means that, in a case where a communication that has been started from the user's self's device has been performed with use of the other device's line by way of the user's self's device started communication transfer means, or, in a case where a communication that has

been started from the other device has been performed by causing the other device to use the user's self's line by way of the another-device started communication relay means, stores the information obtained in association with those respective communications as transfer history managing information, and report output means that outputs a transfer history managing report according to the transfer history managing information that the managing information storage means stores therein.

[DETAILED DESCRIPTION OF THE INVENTION]

[0001]

[TECHNICAL FIELD PERTINENT TO THE INVENTION] The present invention relates to a communication terminal device, such as a facsimile device, that performs a communication via a line.

[0002]

[PRIOR ART] In a communication terminal device such as a facsimile device, when a transmission or a phone talk is being performed, because the transmission function of the user's device or the line (the user's device's line) connected to the user's device is in the state of being kept in use, the user's device is unable to receive. Also, during the reception, because the reception function of the user's device or the user's device's line is in the state of being kept in use, the user's device is unable to perform a transmission or a phone talk.

[0003] On the other hand, in an environment, such as an office, where a plurality of facsimile devices are installed, the respective facsimile device is at some times standing by for

transmission and phone talk, and reception, and therefore is kept out of use, or is at other in the state of transmission or reception and therefore is kept in the state of use. However, it is rare that all the facsimile devices are in the state of use, and, in many cases, there are the facsimile devices that are on standby, i.e. left out of use. Also, even when there are no unoccupied facsimile devices, in the facsimile device that is in transmission, the receiving function thereof is left out of operation. In the facsimile device that is in reception, the transmitting function thereof is left out of operation.

[0004]

[PROBLEMS TO BE SOLVED BY THE INVENTION] However, in the conventional facsimile devices, in a case where the user's own device is receiving, the user's own device rejects the user's transmission operation going to be performed using that device and does not accept the performance of the transmission. In a case where the user's own device is transmitting, because the device's line is in use, the device as a matter of course is unable to accept a reception.

[0005] For this reason, the user needs to look for another facsimile device that is unoccupied and to use that other device. This not only is troublesome but also makes it impossible to effectively utilize the line connected to the respective facsimile device and the transmission function and reception function of the respective facsimile device. This raised the point in problem that there occurred a status wherein the hardware resources are left out of effective use.

[0006] The present invention has been made in view of the above-described circumstances and has an object to provide a communication terminal device that enables making an effective use of the line that is connected, the transmission function, and the reception function and enables making an effective use of the hardware resources.

[0007]

[MEANS FOR SOLVING THE PROBLEMS] To attain the above object, a communication terminal device according to claim 1, the communication terminal device being arranged to perform a communication via a line, is characterized by comprising cordless transmission/reception means that performs wireless communication with another device, user's self's line arrival communication transfer means that, in a case where a communication has arrived at a line connected to the user's managing user's own device, permits the user's managing user's own device to request the other device to perform a proxy reception via the cordless transmission/reception means as occasion demands and causes virtual connection to be made between the other device having accepted that request and the user's managing user's own device's line via the cordless transmission/reception means to thereby cause the other device to perform proxy reception of the communication that has come into the user's managing user's own device's line, and another-device's line arrival communication proxy reception means that, when proxy reception is requested from the other device via the cordless transmission/reception means, permits

the user's managing user's own device to accept that request to perform virtual connection between another line connected to the other device and the user's self's device via the cordless transmission/reception means and thereby perform proxy reception of the communication that has arrived at the other line.

[0008] A communication terminal device according to claim 2, the communication terminal device being arranged to perform a communication via a line, is characterized by comprising cordless transmission/reception means that performs wireless communication with another device, user's self's device started communication transfer means that, in a case where a communication has been started from the user's self's device, permits the user's self's device to request the other device to lend the other line connected to the other device via the cordless communication means as occasion demands to thereby perform virtual connection between the other line connected to the other device having accepted that request and the user's self's device via the cordless transmission/reception means and thereby perform, by using the other line, the communication that has been started from the user's self's device, and another-device started communication relay means that, when a request is made from the other device for it to use the user's self's line connected to the user's self's device via the cordless transmission/reception means, permits the user's self's device to accept that request to thereby perform virtual connection between the user's self's line and the other device

via the cordless transmission/reception means and thereby cause the other device to perform the communication started from the other device by causing the other device to use the user's self's line.

[0009] A communication terminal device according to claim 3 is characterized in that, in the communication terminal device according to claim 1, the user's self's line arrival communication transfer means, when requesting the other device to perform proxy reception via the cordless transmission/reception means, notifies to the other device prescribed identification information that corresponds to the other device and that was stored beforehand; and, on the other hand, the another-device's line arrival communication proxy reception means, when receiving from the other device a request for the user's self's device to perform proxy reception via the cordless transmission/reception means, collates identification information that has been notified together, with identification information that corresponds to the other device and that was stored beforehand, as occasion demands, whereby, only when the both have coincided with each other, the another-device's line arrival communication proxy reception means accepts that request to thereby perform virtual connection between the other device's line connected to the other device and the user's self's device via the cordless transmission/reception means and thereby perform proxy reception of the communication that has arrived at the other device's line.

[0010] A communication terminal device according to claim 4 is characterized in that, in the communication terminal device according to claim 2, the user's self's device started communication transfer means, when requesting the other device to lend the other device's line connected to that other device via the cordless communication means, notifies to the other device prescribed identification information that corresponds to the other device and that was stored beforehand; and, on the other hand, the another-device started communication relay means, when a request is made from the other device for the user's self's device to lend the user's self's line connected to the user's self's device via the cordless transmission/reception means, collates the identification information that has been notified together, with identification information that corresponds to the other device and that was stored beforehand, as occasion demand, whereby, only when the both have coincided with each other, the another-device started communication relay means accepts that request to thereby perform virtual connection between the user's self's line and the other device via the cordless transmission/reception means and thereby cause the other device to perform the communication started from the other device through the use of the user's self's line.

[0011] A communication terminal device according to claim 5 is characterized, in the communication terminal device as described in one of claims 1 and 3, by further comprising another device of priority setting means that sets another device of priority as occasion demands, whereby, in a case where a

communication reception has occurred on the user's self's device's line, when the other device of priority is already set, the user's self's line arrival communication transfer means requests the other device of priority to perform proxy reception via the cordless transmission/reception means.

[0012] A communication terminal device according to claim 6 is characterized, in the communication terminal device as described in one of claims 2 and 4, by further comprising another device of priority setting means that sets another device of priority as occasion demands, whereby, in a case where a communication has been started from the user's self's device, when the other device of priority is set, the user's self's started communication transfer means requests the other device of priority to lend the other device's line connected to that other device.

[0013] A communication terminal device according to claim 7 is characterized, in the communication terminal device according to claims 1, 3, and 5, by further comprising another kept-out-of-use device searching means that searches for another device that, among the other devices, is able to perform proxy reception via the cordless transmission/reception means, whereby the user's self's device's line arrival communication transfer means requests the other device that the another unoccupied device searching means has searched for to perform proxy reception via the cordless transmission/reception means.

[0014] A communication terminal device according to claim 8 is characterized, in the communication terminal device as

described in one of claims 1, 3, and 5, by further comprising another unoccupied line searching means that, among the other devices, searches for a device the line of that can be lent via the cordless transmission/reception means, whereby the user's self's device started communication transfer means requests that other device that the another unoccupied line searching means has searched for and found out to lend the other device's line connected to that other device via the cordless transmission/reception means.

[0015] A communication terminal device according to claim 9 is characterized in that, in the communication terminal device as described in one of claims 1, 3, 5, and 7, in a case where a communication has occurred on the user's self's line connected to the user's self's device, when the user's self's device is in the state of being unable to receive, the user's self's line arrival communication transfer means requests the other device to perform proxy reception via the cordless transmission/reception means.

[0016] A communication terminal device according to claim 10 is characterized, in the communication terminal device as described in one of claims 1, 3, 5, 7, and 9, by further comprising output means that, in a case where a communication that has come into the user's self's line has been proxy-received by the other device through the use of the user's self's line arrival communication transfer means, outputs to the effect that the communication having arrived at the user's self's line has been proxy-received by the other device.

[0017] A communication terminal device according to claim 11 is characterized, in the communication terminal device as described in one of claims 1, 3, 5, 7, 9, and 10, by further comprising managing information storage means that, in a case where a communication that has come into the user's self's line has been proxy-received by the other device through the use of the user's self's line arrival communication transfer means, or, in a case where a communication that has come into the other device's line has been proxy-received by the user's self's device through the use of the another-device's line arrival communication proxy reception means, stores the information obtained in association with those respective communications as transfer history managing information, and report output means that outputs a transfer history managing report according to the transfer history managing information that the managing information storage means stores therein.

[0018] A communication terminal device according to claim 12 is characterized, in the communication terminal device as described in one of claims 2, 4, 6, and 8, by further comprising managing information storage means that, in a case where a communication that has been started from the user's self's device has been performed with use of the other device's line by way of the user's self's device started communication transfer means, or, in a case where a communication that has been started from the other device has been performed by causing the other device to use the user's self's line by way of the another-device started communication relay means, stores the

information obtained in association with those respective communications as transfer history managing information, and report output means that outputs a transfer history managing report according to the transfer history managing information that the managing information storage means stores therein.

[0019]

[EMBODIMENT OF THE INVENTION] An embodiment of the present invention will hereafter be explained in detail with reference to the accompanying drawings.

[0020] First, Fig. 1 illustrates the installed forms of facsimile devices 1, 2, 3, and 4 that serve as communication terminal devices according to an embodiment of the present invention.

[0020] In this figure, the facsimile device 1 (FAX1), facsimile device 2 (FAX2), facsimile device 3 (FAX3), and facsimile device 4 (FAX4) are each installed within an area that enables wireless communication to be performed through the intermediary of an antenna 32a of their respective cordless transmission/reception means 32 as later described. The FAX1 is connected to a telephone line 40 via its own line L1, and the FAX's 2, 3, and 4 also are connected to the telephone line 40 via their own lines L2, L3, and L4. And, those respective facsimile devices, basically, perform facsimile communication through the use of their own, or selves', lines.

[0022] In Fig. 2, there is illustrated the block construction of each of the facsimile devices 1, 2, 3, and 4.

[0023] In the same figure, the facsimile devices 1, 2, 3, and

4 each are constructed in the same way. It comprises a system control part 22, a ROM 23, a RAM 24, a scanner 25, a plotter 26, an image memory 27, a coding and a decoding part 28, an operation display part 29, a modem 30, a net control part 31, a cordless transmission/reception part 32, a system bus 33, and a hand set 34.

[0024] The system control part 22, according to a control program that is written in the ROM 23, controls the respective parts of the device while using the RAM 24 as a working area.

[0025] The ROM 23 is a read only memory that has stored therein a control program for the system control part 22's controlling the respective parts of the device as stated before. Also, in the ROM 23, there is a font table 23a in which font data exists in correspondence with the respective letter code, and the system control part 22, when converting a string of letters into image information, refers to the font table 23a.

[0026] The RAM 24 is a random access memory that, as stated before, is used as the working area for the system control part 22. Incidentally, the RAM 24 is backed up by a circuit for backup not illustrated, whereby, even at the time when interrupting the power source of the device, the contents that are stored therein are held as are.

[0027] The scanner 25 is a device that reads a document image with a prescribed reading linear density of 3.85 lines/mm, 7.7 lines/mm, 15.4 lines/mm, etc. and thereby obtains image information. The plotter 26 is intended to record/output the image information that it has received in corresponding

relationship to the linear density thereof, or record/output (copy-operate) the image information that has been read by the scanner 5 in corresponding relationship to the linear density thereof.

[0028] The image memory 27 is used as a temporary memory area that temporarily stores therein as a file in order to perform memory transmission the image information that has been read by the scanner 25. Or, it is used as that memory area that temporarily stores therein as a file the image information that has been received until that information is recorded by the plotter 26. Or, it is used as that memory area for font-developing for preparation the image information of various kinds of reports such as a communication managing report or the image information of a one-touch dialing registration list or an abbreviated dialing registration list.

[0029] The coding/decoding part 28, on one hand, encodes/compresses transmission image data according to a prescribed coding proceeding such as an MH coding proceeding, MR coding proceeding, or MMR coding proceeding that is compliant with a G3 facsimile and, on the other hand, decodes/expands received image data according to a prescribed decoding proceeding that is compliant with MH coding proceeding, MR coding proceeding, or MMR coding proceeding.

[0030] The operation display part 29, on one hand, although not illustrated, has disposed thereon a ten-key array for designating the facsimile number of an addressee, a transmission start key, a one-touch dial key, and other various

kinds of keys and, on the other hand, is equipped with a display device such as a liquid crystal display device for displaying the state of operation of the device that is to be informed to the user, various messages, etc.

[0031] The modem 30 is a G3 facsimile modem. It, on one hand, modulates transmission data and, on the other hand, demodulates a reception signal. Also, the modem 30 sends out a DTMF signal in correspondence with the dial number that has been input, too. Incidentally, the modem 30 can simultaneously perform modulation of the transmission data and demodulation of the reception signal. And, as a single device, the modem 30 can execute simultaneous processing of transmission and reception.

[0032] By being connected to the telephone line 40, the net control part 31 performs closure/opening of the direct current loop of the line, performs control of the connection with the line, such as detection of the inversion of the polarity of the line, detection of the line opening, detection of the dial tone, detection of the tone signal such as a busy tone (the line is engaged), detection of the call signal, etc., or performs production of the dial pulse. In addition, to the net control part 31 there is connected the hand set 34, whereby the net control part 31 also performs on/off hook control of the hand set 34 and switching control of it with respect to the telephone line 40, etc. Incidentally, the net control part 31 and the modem 31 directly perform transmission/reception of a communication signal with no system bus intervening in between. Also, the net control part 31 and the cordless

transmission/reception part 32 as later described directly performs transmission/reception of a communication signal with no system bus 33 intervening in between.

[0033] The cordless transmission/reception part 32 is equipped with the antenna 32a. It thereby transmits notification information that is given from the system control part 22, or a signal from the net control part 31, from the antenna 32a and wirelessly. It, on the other hand, notifies to the system control part 22 the notification information that has been received by way of the antenna 32a, or, outputs to the net control part 31 a signal that it has received. The cordless transmission/reception part 32 can perform wireless communication between a facsimile device that it belongs to and another facsimile device, i.e., one, for example, of the respective other facsimile devices 2, 3, and 4 that remain when viewing from the facsimile device 1 that serves as a that cordless transmission/reception part 32's own facsimile device. The system bus 33 is a signal line that is intended for the above-described respective parts to perform transmission/reception of the data.

[0034] In Fig. 3, there is illustrated a schematic construction of the net control part 31.

[0035] In this same figure, within the net control part 31, a subscriber's line led from the telephone line 40 is accommodated as a facsimile device's line. This facsimile device's line is connected to a switch S1. It through the control of the system control part 22 is connected, by switching, to any one of the

hand set 34, the modem 30 (reception), the modem 30 (transmission), or the cordless transmission/reception part 32 (virtual another-device's line). A direct current detection part 31a is intended to detect the state of closure or opening of the direct current loop of its own device's line while, on the other hand, a communication arrival detection part 31b detects a call signal that comes on the self's device's line from the telephone line 40, thereby detecting the arrival of a communication.

[0036] Switches S3, S4, S5, and S6, in a case where the hand set 34, the modem 30 (reception), the modem 30 (transmission), and the cordless transmission/reception part 32 (virtual another-device's line) are respectively off-hooked, are closed and, in a case where those portions are on-hooked, are opened.

[0037] Line transformers T1, T2, and T3 respectively perform retention of the direct current loop between the modem 30 (reception), the modem 30 (reception), and the cordless transmission/reception part 32 (virtual another-device's line) and the line 40. Incidentally, in the hand set 34, the direct current loop is retained on the hand set 34's side.

[0038] A switch S2, through the control of the system control part 22, selectively connects the cordless transmission/reception part 32 (virtual another-device's line) to one of the hand set 34, the modem 30 (reception), and the modem 30 (transmission), or does not connect the cordless transmission/reception part 32 to any one of them.

[0039] Also, the respective facsimile devices, as illustrated

in Figs. 4 to 7, each store in the RAM 24 an intra-device transfer managing table 24a beforehand.

[0040] Fig. 4 illustrates the contents of the intra-device transfer managing table 24a in the facsimile device 1.

[0041] In this figure, the table is constructed of the records about the respective facsimile devices (line) 1 (L1), 2 (L2), 3 (L3), and 4 (L4), and the respective record is constructed of an "identification number" field, "self's device" field, "priority another device (another-device's line)" field, and "ID" field.

[0042] The "identification number" is the number for identifying the respective device. The "self's device" indicates that the value "1" is a self's device; and the value "0" is another device. In Fig. 4, since the facsimile device 1 is a self's device, the "self's device" in the record corresponding to the FAX1 has a value of "1" and the "self's device" in the respective record other than that record has a value of "0". The "priority another device (another-device's line)" is the item that sets another device that, for the self's device, is most preferentially wanted to have connected between the self's device and that other device virtual line as later described. The device having a value of "1" indicates that, for the self's device (in this case the FAX1), that device is set as another device of priority. The FAX 4 (L4) is set as another device of priority (another-device's line) for the FAX1.

[0043] The "ID" is an identification number that is notified

when requesting the establishment of a virtual line between two of the respective facsimile devices and that, in a case where that identification number has been notified from another relevant device, in a case where the self's device accepts the establishment of a virtual line between itself and the other relevant device, is sent back to that requester device. In the facsimile device 1, there are registered a number 12 between itself and the facsimile device 2, a number 13 between itself and the facsimile device 3, and a number 14 between itself and the facsimile device 4.

[0044] Fig. 5 illustrates the contents of the intra-device transfer managing table 24a in the facsimile device 2.

[0045] In Fig. 5, since the facsimile device 2 is a self's device, the "self's machine" in the records corresponding to the FAX2 has a value of "1" and the "self's machines" in the records other than that record each have a value of "0". The "priority another device (another-device's line)" is set as a setting of that the FAX4 (L4) be another device of priority (another-device's line) for the FAX2. In the field "ID", there are registered a number 12 between the facsimile device 2 and the facsimile device 1, a number 23 between the facsimile device 2 and the facsimile device 3, and a number 24 between the device 2 and the facsimile device 4.

[0046] Fig. 6 illustrates the contents of the intra-device transfer managing table 24a in the facsimile device 3.

[0047] In Fig. 6, since the facsimile device 3 is a self's device, the "self's machine" in the records corresponding to the FAX3

has a value of "1" and the "self's machines" in the records other than that record each have a value of "0". The "priority another device (another-device's line)" is set as a setting of that the FAX4 (L4) be another device of priority (another-device's line) for the FAX3. In the field "ID", there are registered a number 13 between the facsimile device 3 and the facsimile device 1, a number 23 between the facsimile device 3 and the facsimile device 2, and a number 34 between the device 3 and the facsimile device 4.

[0048] Fig. 7 illustrates the contents of the intra-device transfer managing table 24a in the facsimile device 4.

[0049] In Fig. 7, since the facsimile device 4 is a self's device, the "self's machine" in the records corresponding to the FAX4 has a value of "1" and the "self's machines" in the records other than that record each have a value of "0". The "priority another device (another-device's line)" is set none. In the field "ID", there are registered a number 14 between the facsimile device 4 and the facsimile device 1, a number 24 between the facsimile device 4 and the facsimile device 2, and a number 34 between the device 4 and the facsimile device 3.

[0050] In Fig. 8, there is illustrated an information format that is used when the respective facsimile device 1, 2, 3, or 4 perform mutual information notification between itself and another one of the remaining facsimile devices via the cordless transmission/reception part 32. In this figure, notification information is notified in the way of being followed by an another-machine (another-machine's line) identification

number and a self's machine (self's machine's line) identification number, whereby the notification destination and the notification origin are particularized.

[0051] Next, the processing procedure that is executed in each of the respective facsimile devices 1, 2, 3, and 4 will be explained.

[0052] First, in Fig. 9, the system control part 22 of the respective facsimile device monitors (No loop of determination 101) whether a self's machine's transmission or self's machine's phone talk has been started. It is to be noted that the self's machine's transmission is started by an original document's being set on the scanner 25 of the self's device, the phone number of the transmission addressee's being designated from the operation display part 29, and the transmission start key's being depressed. The self's machine's phone talk is started by the hand set 34's being off-hooked.

[0053] And, when the self's machine's transmission or self's machine's phone talk is started (Yes of determination 101), the system control part 22 determines (determination 102) whether the self's machine is in the state of requesting another machine to perform proxy transmission. It is to be noted that the wording "proxy transmission", although described later, means not a transmission that is performed using the self's machine's line but a transmission that is performed borrowing a line (another-device's line) the device of that has virtual-connected thereto via the cordless transmission/reception part

32 the self's machine.

[0054] In a case where the self's machine is not in the state of requesting another machine to perform proxy transmission (No of determination 102), the system control part 22 determines (determination 103) whether the self's machine is in the state of performing proxy reception that responds to a from-another-machine request. It is to be noted that the wording "proxy reception", although described later, means performing virtual connection of a communication that has arrived at a self's device's line to another device via the cordless transmission/reception part 32 and thereby causing this other device to receive that communication.

[0055] In a case where the self's device is not in the state of performing proxy reception from another device (No of determination 104), further, the system control part 22 determines (determination 104) whether a setting of an another-device's line of priority exists in the intra-device transfer management table 4a. When that setting exists (Yes of determination 105), an inquiry is made of the line status of the another-device's line of priority (processing 105) via the cordless transmission/reception part 32. It is to be noted that, although, in the inquired other device, the processing procedures illustrated in Fig. 11 are executed in corresponding relationship to the processing 105 to the processing 114, those processing procedures will be described later.

[0056] And, when, as a result of that inquiry, that another-device's line of priority (the other device of

priority's line) is unoccupied (Yes of determination 106), an ID that is registered in the intra-device transfer management table 4a and that is set between another device corresponding to the another-device's line of priority and the user's managing user's self's device is notified via the cordless transmission/reception part 32 (processing 107). In response to that notification, the same ID is sent back to the self's device from the other device corresponding to the another-device's line of priority. In a case where that ID is OK (Yes of determination 108), it results that requesting proxy transmission becomes possible. Therefore, the self's machine's modem 30 (transmission) or the hand set 34 is connected to the virtual another-device's line (the cordless transmission/reception part 32) by controlling the switch S2 of the net control part 31 (processing 109). Simultaneously, the switch S3 or the switch S5 and the switch S6 are closed to thereby establish a virtual line between the self's device and the other device corresponding to the another-device's line of priority (processing 110). Thereby, the facsimile transmission in accordance with the G3 facsimile protocol, or voice communication (phone talk) based on the use of the hand set 34, is performed (processing 111). And, the processing 111 continues to be executed until the transmission processing that uses the self's machine's modem 30 (transmission) is terminated, or until the phone talk that uses the hand set 34 finishes being done and is on-hooked (No loop of determination 112). When such has finished being done (Yes of determination 112), the self's

device notifies the termination of the communication to the other machine with respect to that the self's device established so far the virtual line via the cordless transmission/reception part 32 (processing 113).

[0057] After, in this way, the self's device has transferred the communication that was started from the self's device to the another device of priority (the other device of priority) via the cordless transmission/reception part 32 and has performed transmission or phone talk by borrowing the another device of priority's line, the transfer history information that is information associated with that transfer is registered into the transfer history management table 24b illustrated in Fig. 18. The transfer history management table 24b illustrated in Fig. 18 is stored in the RAM 24. Incidentally, the transfer history management table 24b will be described later.

[0058] Now, in a case where in the determination 102 the self's machine is requesting the other machine to perform proxy transmission (Yes of determination 102), in a case where in the determination 103 the self's machine is proxy-receiving from the other machine (Yes of determination 103), in a case where in the determination 104 the self's device does not have set therein any other device of priority's line (No of determination 104), in a case where in the determination 106 a relevant other device of priority's line is occupied (No of determination 106), or, in a case where the ID is not OK (No of determination 108), that is to say, in a case where the self's machine is in the state of being unable to request the other machine to perform

proxy transmission, the processing succeeding from the determination 201 downward, which are illustrated in Fig. 10, are executed.

[0059] In the determination 201 of Fig. 10, the system control part 22 determines whether the self's device's line is unoccupied, namely whether the self's device's line is not in the state of being in the course of a communication or phone talk by the hand set 34, the modem 30 (reception), or the cordless transmission/reception part 32 (virtual another-device's line) 32's being connected to the self's device's line. In a case where the self's device's line is unoccupied (Yes of determination 201), the system control part 22 further determines whether the self's device is performing proxy transmission with respect to another machine and is thereby in the state of its transmission function being unable to be used (determination 202). In a case where the self's device is not in the state of requesting another machine to perform transmission on behalf of the self's device (Yes of determination 202), this means that it is possible to perform an ordinary transmission with use of the self's device's transmission function and the self's device's line. Therefore, the self's machine's modem 30 (transmission) or the hand set 34 is connected to the self's device's line by controlling the switch S1 of the net control part 31 (processing 204), and, at the same time, by closing the switch S3 or the switch S5, the line is established (processing 205), thereby facsimile transmission compliant with the G3 facsimile protocol or voice

communication (phone talk) using the hand set 34 is performed (processing 206). And, the processing 206 continues to be executed (No loop of determination 207) until the transmission processing using the self's machine's modem 30 (transmission) is terminated or the phone talk using the hand set 34 is terminated and on-hooked (Yes of determination 207).

[0060] In a case where in the determination 201 the self's device's line is not unoccupied (No of determination 201), or in a case where, even when the self's device's line is unoccupied, the self's device is requesting another device to perform proxy transmission and therefore the self's device's transmission function is not out of use (Yes of determination 201 and Yes of determination 202), the self's device in some cases makes display output, with respect to the operation display part 29, of the information to the effect that transmission is impossible or, makes an audible output of the warning sound, thereby the self's device outputs (processing 203) and notifies to the user that the self's device is presently in the state of being unable to perform transmission or phone talk.

[0061] Next, an explanation will be given of the processing procedure illustrated in Fig. 11 that is executed in another device that is the destination of inquiry in corresponding relationship to the processing 105 to the processing 114 of Fig. 9.

[0062] In Fig. 11, the system control part 22 of each of the respective facsimile devices 1, 2, 3, and 4 monitors (No loop of determination 301) whether an inquiry is made about the

status of the self's device's line via the cordless transmission/reception part 32.

[0063] And, when a Yes determination is made in the determination 301 in correspondence with the processing 105 of Fig. 9 that is executed in the other device, the system control part 22 confirms (determination 302) the status of the self's device's line by means of the direct current detection part 31a or the communication arrival detection part 31b, and then determines (determination 303) whether the self's device's line is not in the state of being used by the self's device's modem 30 or the hand set 34 and therefore is in the state of being unoccupied.

[0064] In a case where the self's device's line is unoccupied (Yes of determination 303), the self's device notifies to the other device a radio signal to the effect of "unoccupied" via the cordless transmission/reception part 32 (processing 304). In a case where that line is not unoccupied (No of determination 303), the self's device notifies to the other device a radio signal to the effect of "not unoccupied" via the cordless transmission/reception part 32 (processing 305). The processing 304 and the processing 305 correspond to the determination 106 of Fig. 9 in the other device.

[0065] And, the system control part 22 monitors (No loop of determination 306) whether notification of an ID has been made in correspondence with the processing 107 of Fig. 9. When that notification has been made (Yes of determination 306), the self's device determines whether that ID coincides with the ID

that is registered in the intra-device transfer management table 4a in correspondence with the other device that is the proxy transmission requester. Simultaneously, the self's device determines whether it may permit the self's device's line to be used for the proxy transmission that has been requested from the other device. Thereby, it determines (processing 307) whether the ID that has been notified is OK, which means that the ID is the one capable of accepting the request to perform proxy transmission. Here, for example, in a case where the self's device is the one the use frequency, or the reception frequency, of that is higher than that of each of the other devices, this effect can be registered beforehand. And, by doing so, even when the notified ID coincides with the ID that is stored in the self's device correspondingly, it is also possible to regard that notified ID as not coinciding with the latter ID. In this case, there is the merit that the self's device's line can be used for the self's device's transmission or reception function.

[0066] In a case where in the determination 307 it has been determined that the ID that has been notified from the proxy transmission requester is not OK (No of determination 307), the self's device non-notifies the ID and rejects the request of the proxy transmission (processing 308) and terminates the relevant processing operations.

[0067] In a case where the self's device has determined that the ID that has been notified is OK (Yes of determination 307), it notifies the ID that has been stored correspondingly to that

former ID and thereby accepts the request to perform transmission (processing 309). The processing 308 and the processing 309 are in corresponding relationship to the determination 108 of Fig. 9 in the other device.

[0068] When accepting, in the processing 309, the request for performing proxy transmission, the self's device's line is connected to the virtual another-device's line (the cordless transmission/reception part 32) (processing 310) by controlling the switch S1 of the net control part 31.

Simultaneously, the switch S6 is closed, thereby the virtual line is established with respect to the other device that is the proxy transmission requester (processing 311). By doing so, the self's device permits the performance of the facsimile transmission according to the G3 facsimile protocol or the performance of the voice communication using the hand set 34 (processing 312). And, the system control part 22 monitors (No loop of determination 313) whether a termination notification occurs via the cordless transmission reception part 32 through the execution of the processing 113 of Fig. 9 in the other device.

[0069] And, after a termination notification has occurred (Yes of determination 313), namely the communication that has been transferred by the proxy transmission's being requested from the other device via the cordless transmission/reception part 32 has been terminated, the transfer history information that is information associated with that transfer is registered in the transfer history management table 24b illustrated in Fig. 18. The transfer history management table 24b illustrated in

Fig. 18 is stored in the RAM 24. Incidentally, the transfer history management table 24b will be described later.

[0070] By the respective facsimile device 1, 2, 3, or 4's executing the processing procedures illustrated in Figs. 9, 10, or 11 in the above-described way, even when the self's device's line is unoccupied, if a priority another device's line is set, the self's device becomes able to perform a communication started from the self's device by using that priority another device's line and keep the self's device's line out of use and prepare with respect to the self's device's line. Also, in the device on a side having requested with respect thereto the proxy transmission, it can limit the use of it according to the determination on the ID without permitting the self's device's line to be unconditionally used for proxy transmission of the other device. Therefore, it also becomes possible to prevent the self's device's line from being used more than necessary and thereby prevent an obstacle from coming out on the communication being performed in the self's device.

[0071] Next, the communication arrival processing procedures in the respective facsimile devices 1, 2, 3, and 4 will be explained with reference to Figs. 12 to 16.

[0072] First, in Fig. 12, the system control part 22 of each of the respective facsimile devices monitors (No loop of determination 401) a communication arrival at the self's device's line through the communication arrival detection part 32b. In a case where a communication arrival has occurred (Yes of determination 401), the system control part 22 determines

whether the self's machine's reception function is OK, namely whether the plotter 26 is in the state of being unable to record received image data because of running out of paper, getting paper-jammed, or running out of toner, or the like, or whether a fault is occurring in the reception function of the modem 30, or etcetera (determination 402).

[0073] And, in a case where the self's device's reception function is OK (determination 402), the system control part 22 further determines (determination 403) whether that reception function is performing proxy reception by being requested from another machine. When it is not performing proxy reception (No of determination 403), since the reception function of the self's device is usable and therefore unoccupied, the self's machine's modem 30 (reception) is connected to the self's device's line (processing 405) by controlling the switch S1 of the net control part 31, and, simultaneously, by closing the switch S4, the line is established (processing 406). Thereby, the self's device performs facsimile reception based on the G3 facsimile protocol (processing 407). And, the self's device goes on executing the processing 407 while monitoring whether the self's machine's transmission (phone talk) is started, or, whether the reception processing using the self's machine's modem 30 (reception) is terminated and the on-hook operation is done (No of determination 408 and No loop of determination 409).

[0074] In a case where in the determination 402 the self's machine's reception function is not OK (No of determination 402),

the flow proceeds to a determination 501 of Fig. 13. Also, in a case where, during the reception of a communication having reached the self's device's line by the reception function of the self's device, a self's machine's transmission (phone talk) has been started (Yes of determination 408), the operational flow proceeds to a determination 501 of Fig. 15.

[0075] In a case where in the determination 402 the self's machine's reception function is not OK (No of determination 402), the system control part 22 determines in the determination 501 of Fig. 13 whether the self's machine is in the state of requesting another machine to perform proxy transmission. In a case where the self's machine is requesting the other machine to perform proxy transmission (Yes of determination 501), since the self's machine is in the state of its reception function's being not OK and in addition the cordless transmission/reception part 32 is in the state of being used for proxy transmission, the self's machine in some cases makes display output, with respect to the operation display part 29, of the information to the effect that reception is impossible or, makes an audible output of the warning sound, thereby the self's machine outputs (processing 502) and notifies to the user that the self's machine is presently in the state of being unable to perform reception.

[0076] In a case where the self's machine is not in the state of requesting another machine to perform proxy transmission (No of determination 501), since the cordless transmission/reception part 32 is presently in the state of

being unoccupied, the self's machine further determines (determination 503) whether another machine of priority is set in the intra-device transfer management table 4a. When that setting exists (Yes of determination 503), the self's machine inquires about the status of the reception function of the other machine of priority via the cordless transmission/reception part 32 (processing 504). Incidentally, in the inquired other device, the processing procedure illustrated in Fig. 17 is executed in correspondence with the processing 504 to the processing 512, and, that processing procedure will later be described.

[0077] In a case where, as a result of that inquiry, the reception by the priority other machine is OK (Yes of determination 505), the self's machine notifies (processing 506) via the cordless transmission/reception part 32 the ID that is registered in the intra-device transfer management table 4a and that is set between the priority other machine and the self's machine. And, in a case where the self's machine has sent back thereto from the priority other machine in reply to that notification the same ID and where that ID is OK (Yes of determination 507), since requesting the proxy reception becomes possible, the self's machine's line is connected to the virtual other-device's line (the cordless transmission/reception part 32) by controlling the switch S1 of the net control part 31 (processing 508). Simultaneously, by closing the switch S6, a virtual line is established between the user's managing user's self's machine and the priority other device (processing 509), thereby causing

the other machine to perform facsimile reception that is compliant with the G3 facsimile protocol (processing 510). [0078] And, the processing 510 continues to be executed (No loop of determination 511) until the reception processing by the modem 30 (reception) of the priority other device is terminated and a termination notification comes via the cordless transmission/reception part 32. When a termination notification arrives (Yes of determination 511), the transfer history information that is information associated with the transfer made during the proxy reception that has been performed by transferring the communication that arrived at the self's machine's line to the priority other device via the cordless transmission/reception part 32 is registered in the transfer history management table 24b illustrated in Fig. 18. The transfer history management table 24b illustrated in Fig. 18 is stored in the RAM 24. Incidentally, the transfer history management table 24b will later be described.

[0079] And, the self's machine's system control part 22 outputs (processing 513) the information to the effect that the communication that arrived at the self's machine's line has been transferred to the other device and has been received by this other device, by making display output of that information to the operation display part 29 or by making recording output of that information by the plotter 26. By doing so, the fact that the communication that the self's device should if ordinary have received has been received by the other device is notified to the user.

[0080] Now, in a case where in the determination 503 there is no setting of an another device of priority's line (No of determination 503), in a case where in a determination 505 reception is not OK (No of determination 505), or, in a case where in a determination 507 a relevant ID is not OK (No of determination 507), namely in a case where the self's machine is in the state of being unable to request another device of priority to perform proxy reception, the processing procedures succeeding from a processing 601 downward illustrated in Fig. 10 are executed.

[0081] In the processing 601 of Fig. 10, the self's machine sequentially inquires about the status of the reception function of the remaining respective machine other than the other machine of priority via the cordless transmission/reception part 32. Incidentally, although in the inquired respective other device the processing procedure illustrated in Fig. 17 is executed in corresponding relationship to the processing 601 to the processing 610, that processing procedure will later be described.

[0082] And, in a case where, as a result of that inquiry, the remaining other devices whose reception functions are normal and the receptions by that are OK exist one or more in number (Yes of determination 602), the self's machine notifies (processing 604) to a particular other machine whose reception is OK via the cordless transmission/reception part 32 the ID that is registered in the intra-device transfer management table 4a and that is set between the other machine and the self's

device. And, in a case where, in reply to that notification, the same ID is sent back from the other machine and, resultantly, the ID is OK (Yes of determination 605), since the self's device can request the other machine to perform proxy reception, the operational flow proceeds to the processing 606.

[0083] In a case where, regarding that other machine, the ID is not OK (No of determination 605), the system control part 22 repeatedly executes, regarding the next other machine whose reception is OK, the determination 602, processing 604, and determination 605. And, in a case where, as a result of that, the remaining other machines whose receptions are truly OK by the reception functions' being normal and by the IDs' having been determined OK in the determination 605 are none (No of determination 602), since it results that under the circumstance where the self's machine's reception function is not OK the other machines that the self's machine can request to perform proxy reception are none, the self's machine in some cases makes display output, with respect to the operation display part 29, of the information to the effect that reception is impossible or, makes audible output of the warning sound, thereby the self's machine outputs (processing 603) and notifies to the user that the self's machine is presently in the state of being unable to perform reception.

[0084] In a case where, in the determination 605, the ID is OK (Yes of determination 605) and requesting proxy reception is possible, the self's device's line is connected to the virtual another-device's line (the cordless transmission/reception

part 32) by controlling the switch S1 of the net control part 31 (processing 606). Simultaneously, by closing the switch S6, the virtual another-device's line is established between the self's device and the other device that has notified to it that the ID is OK (processing 607). By doing so, the self's device causes the other device to perform reception compliant with the G3 facsimile protocol (processing 608).

[0085] And, the system control part 22 continues to execute the processing 608 (No loop of determination 609) until the reception processing by the other device's modem 30 (reception) is terminated and a termination notification occurs via the cordless transmission/reception part 32. When that termination notification has occurred (Yes of determination 609), the transfer history information that is information associated with the transfer made during the proxy reception that has been performed by transferring the communication that arrived at the self's machine's line to the other device via the cordless transmission/reception part 32 is registered in the transfer history management table 24b illustrated in Fig. 18. The transfer history management table 24b illustrated in Fig. 18 is stored in the RAM 24. Incidentally, the transfer history management table 24b will later be described.

[0086] And, the self's machine's system control part 22 outputs (processing 611) the information to the effect that the communication that arrived at the self's machine's line has been transferred to the other device and has been received by this other device, by making display output of that information to

the operation display part 29 or by making recording output of that information by the plotter 26. By doing so, the fact that the communication that the self's device should if ordinary have received has been received by the other device is notified to the user.

[0087] Next, an explanation will be given of the processing procedure that succeeds from a determination 701 of Fig. 15 downward and that is executed when, during a time period in which a communication that has come on the self's device's line is being received by the self's device's reception function, a self's machine's transmission (phone talk) has been started in Fig. 12 (Yes of a determination 408).

[0088] The system control part 22 determines in the determination 701 of Fig. 15 whether the self's machine is requesting another machine to perform proxy transmission. In a case where the self's machine is requesting another machine to perform proxy transmission (Yes of determination 701), since, even when the self's device's transmission function is unoccupied, the self's device's line is in use and, in addition, proxy transmission that is made via the cordless transmission/reception part 32 is kept unable to be performed, the self's machine in some cases makes display output, with respect to the operation display part 29, of the information to the effect that transmission is impossible or, makes audible output of the warning sound, thereby the self's machine outputs (processing 702) and notifies to the user that the self's machine is presently in the state of being unable to perform

transmission or phone talk.

[0089] In a case where the self's machine is not requesting another machine to perform proxy transmission (No of determination 701), the self's machine further determines (determination 703) whether there is a setting of an another device of priority's line in the intra-device transfer management table 4a. When that setting exists (Yes of determination 703), the self's machine inquires about the line status of that another device of priority's line via the cordless transmission/reception part 32 (processing 704). Incidentally, in the inquired other device, the processing procedure illustrated in Fig. 11 that was already explained is executed in corresponding relationship to the processing 704 to the processing 713.

[0090] And, when, as a result of that inquiry, that another device of priority's line is unoccupied (Yes of determination 705), an ID that is registered in the intra-device transfer management table 4a and that is set between another device corresponding to the another-device's line of priority and the user's managing user's self's device is notified via the cordless transmission/reception part 32 (processing 706). In response to that notification, the same ID is sent back to the self's device from the other device corresponding to the another-device's line of priority. In a case where that ID is OK (Yes of determination 707), it results that requesting proxy transmission becomes possible. Therefore, the self's machine's modem 30 (transmission) or the hand set 34 is

connected to the virtual another-device's line (the cordless transmission/reception part 32) by controlling the switch S2 of the net control part 31 (processing 708). Simultaneously, the switch S3 or switch S5 and the switch S6 are closed to thereby establish a virtual line between the self's device and the other device corresponding to the another-device's line of priority (processing 709). Thereby, the facsimile transmission in accordance with the G3 facsimile protocol, or voice communication (phone talk) based on the use of the hand set 34, is performed (processing 710). And, the processing 710 continues to be executed until the transmission processing that uses the self's machine's modem 30 (transmission) is terminated, or until the phone talk that uses the hand set 34 finishes being done and is on-hooked (No loop of determination 711). When such has finished being done (Yes of determination 711), the self's device notifies the termination of the communication to the other machine with respect to that the self's device established the virtual line so far via the cordless transmission/reception part 32 (processing 712).

[0091] After, in this way, the self's device has transferred the communication that was started from the self's device to the other device of priority via the cordless transmission/reception part 32 and has performed transmission or phone talk by borrowing the other-device's line of priority, the transfer history information that is information associated with that transfer is registered into the transfer history management table 24b illustrated in Fig. 18. The transfer

history management table 24b illustrated in Fig. 18 is stored in the RAM 24. Incidentally, the transfer history management table 24b will be described later.

[0092] Now, in a case where in the determination 703 there is no setting of an another-device's line of priority (No of determination 703), in a case where in a determination 705 the other-device's line of priority is not out of use (No of determination 705), or, in a case where in a determination 707 a relevant ID is not OK (No of determination 707), namely in a case where the self's machine is in the state of being unable to request another device of priority to perform proxy reception, the processing succeeding from a processing 801 downward illustrated in Fig. 16 are executed.

[0093] In the processing 801 of Fig. 16, the self's machine sequentially inquires about the status of the other-device's line of the respective other device than the relevant other device of priority via the cordless transmission/reception part 32. Incidentally, in the inquired other device, the processing procedure illustrated in Fig. 11 that was already explained is executed in corresponding relationship to the processing 801 to the processing 811.

[0094] And, in a case where, as a result of that inquiry, the other devices whose lines are unoccupied exist one or more in number (Yes of determination 801), the self's machine notifies (processing 804) to a particular other machine whose line is unoccupied via the cordless transmission/reception part 32 the ID that is registered in the intra-device transfer management

table 4a and that is set between the other machine and the self's device. And, in a case where, in reply to that notification, the same ID is sent back from the other machine and, resultantly, the ID is OK (Yes of determination 805), since the self's device can request the other machine to perform proxy transmission, the operational flow proceeds to the processing 806.

[0095] In a case where, regarding that other machine, the ID is not OK (No of determination 805), the system control part 22 repeatedly executes, regarding the next other machine whose line is unoccupied, the determination 802, processing 804, and determination 805. And, in a case where, as a result of that, the remaining other machines whose lines can truly be used by their lines' being unoccupied and by their IDs' having been determined OK in the determination 805 are none (No of determination 802), since it results that under the circumstance where the self's machine cannot be used for reception the other machines that the self's machine can request to perform proxy transmission are none, the self's machine in some cases makes display output, with respect to the operation display part 29, of the information to the effect that reception is impossible or, makes audible output of the warning sound, thereby the self's machine outputs (processing 803) and notifies to the user that the self's machine is presently in the state of being unable to perform reception.

[0096] In a case where, in the determination 805, the ID is OK (Yes of determination 805) and requesting proxy reception is possible, the self's device's modem 30 (transmission) or the

hand set 34 is connected to the virtual another-device's line (the cordless transmission/reception part 32) by controlling the switch S2 of the net control part 31 (processing 806). Simultaneously, by closing the switch S3 or switch S5 and the switch S6, the virtual another-device's line is established between the self's device and the other device that corresponds to the other-device's line of priority (processing 807). By doing so, the self's device performs facsimile transmission compliant with the G3 facsimile protocol or performs voice communication (phone talk) using the hand set 34 (processing 808). And, the system control part 22 continues to execute the processing 808 (No loop of determination 809) until the transmission processing by the self's device's modem 30 (transmission) is terminated, or, a phone talk using the hand set 34 is terminated and on-hooked. When that termination has occurred (Yes of determination 809), the self's device notifies the termination of the communication via the cordless transmission/reception part 32 to the other machine with respect to that the self's machine established the virtual line so far (processing 810).

[0097] After, in this way, the self's device has transferred the communication that was started from the self's device to the other device of priority via the cordless transmission/reception part 32 and has performed transmission or phone talk by borrowing the other-device's line of priority, the transfer history information that is information associated with that transfer is registered into the transfer history

management table 24b illustrated in Fig. 18. The transfer history management table 24b illustrated in Fig. 18 is stored in the RAM 24. Incidentally, the transfer history management table 24b will be described later.

[0098] Next, an explanation will be given of the processing procedure illustrated in Fig. 17 that is executed in another device that is the destination of inquiry in corresponding relationship to the processing 504 to the processing 512 of Fig. 13 and the processing 601 to the processing 610 of Fig. 14.

[0099] In Fig. 17, the system control part 22 of each of the respective facsimile devices 1, 2, 3, and 4 monitors (No loop of determination 901) whether an inquiry is made about the status of the self's device's reception function via the cordless transmission/reception part 32.

[0100] And, when a Yes determination is made in the determination 901 in correspondence with the processing 504 of Fig. 13 and the processing 601 of Fig. 14, the system control part 22 confirms (determination 902) the status of the reception by checking the status of the self's device's plotter 26 and the reception function of the self's device's modem 30 and thereby determines (determination 903) whether the self's device is in the state of the reception's being OK.

[0101] In a case where the reception is OK (Yes of determination 903), the self's device notifies (processing 904) the effect of the reception's being "OK" to the other device via the cordless transmission/reception part 32. In a case where the reception is not OK (No of determination 903), the self's device

notifies (processing 905) the effect of the reception's being "NG" to the other device via the cordless transmission/reception part 32. The processing 904 and the processing 905 stand in corresponding relationship to the determination 505 of Fig. 13 or the determination 602 of Fig. 14 in the other device.

[0102] And, the self's device monitors (No loop of determination 906) whether a notification of the ID occurs in corresponding relationship to the processing 506 of Fig. 13 or the processing 604 of Fig. 14. When that notification occurs (Yes of determination 906), the system control part 22 determines whether that ID coincides with the ID that is registered in the intra-device transfer management table 4a in correspondence with the other device that is the proxy transmission requester. Simultaneously, the self's device determines whether it may permit the self's device's reception function to be used for the proxy reception that has been requested from the other device. Thereby, it determines (processing 907) whether the ID that has been notified is OK, which means that the ID is the one capable of accepting the request to perform proxy reception. Here, for example, in a case where the self's device is the one the use frequency, or the reception frequency, of that is higher than that of each of the other devices, that effect can be registered beforehand. And, by doing so, even when the notified ID coincides with the ID that is stored in the self's device correspondingly, it is also possible to regard that notified ID as not coinciding with the latter ID. In this case, there

is the merit that the self's device's reception function can be preserved that has come on the self's device's line.

[0103] In a case where in the determination 907 it has been determined that the ID that has been notified from the proxy reception requester is not OK (No of determination 907), the self's device non-notifies the ID and rejects the request of the proxy reception (processing 908) and terminates the relevant processing operations.

[0104] In a case where the self's device has determined that the ID that has been notified is OK (Yes of determination 907), it notifies the ID that has been stored correspondingly to that former ID and thereby accepts the request to perform proxy reception (processing 909). The processing 908 and the processing 909 are in corresponding relationship to the determination 507 of Fig. 13 and the determination 605 of Fig. 14 in the other device.

[0105] When accepting, in the processing 909, the request for performing proxy transmission, the self's device's modem 30 (reception) is connected to the virtual another-device's line (the cordless transmission/reception part 32) (processing 310) by controlling the switch S2 of the net control part 31. Simultaneously, the switch S6 is closed, thereby the virtual line is established with respect to the other device that is the proxy reception requester (processing 911). By doing so, the self's device permits the performance of the facsimile reception according to the G3 facsimile protocol (processing 912). Upon termination of the reception (Yes of determination

913), the self's device notifies (processing 914) a termination of the reception processing to the other device that is the proxy reception requester. The processing 914 stands in corresponding relationship to the determination 511 of Fig. 13 or the determination 609 of Fig. 14 in the other device.

[0106] And, after the communication that has been transferred by the proxy reception's being requested from the other device via the cordless transmission/reception part 32 has been terminated, the transfer history information that is information associated with that transfer is registered in the transfer history management table 24b illustrated in Fig. 18. The transfer history management table 24b illustrated in Fig. 18 is stored in the RAM 24. Incidentally, the transfer history management table 24b will be described later.

[0107] By the respective facsimile device 1, 2, 3, or 4's executing the processing procedures illustrated in Figs. 12 to 16, or Fig. 17 in the above-described way, in a case where a fault exists in the self's device's reception function and therefore the self's device cannot process by itself a communication that has arrived at the self's device's line, the self's device can cause another device to perform proxy reception. Also, in the device on a side having requested with respect thereto the proxy reception, it can limit the use of it according to the determination on the ID without permitting the self's device's reception function to be unconditionally used for proxy reception for the other device. Therefore, it also becomes possible to prevent the self's device's reception

function from being used more than necessary and thereby prevent an obstacle from coming out on the communication being performed in the self's device. In addition, even when in case the self's device's line is not unoccupied the self's machine transmission or self's machine is started, the self's machine can cope with the communication that has been started like that by using an another-device's line.

[0108] As has been explained above, in the respective facsimile device according to this embodiment, by making mutual use of the self's device's line and the self's device's transmission function and reception function between this device itself and another one of such facsimile devices, it becomes possible to make effective use of the communication resources and, in addition, it is possible to decrease as a whole the opportunity of the respective device's coming into a state of being unable to perform any communications. As a result of this, it is possible to enhance the user's convenience.

[0109] Finally, an explanation will be given of the transfer history information that is sequentially registered in the transfer history management table of Fig. 18 in the processing 314 of Fig. 11, the processing 512 of Fig. 13, the processing 610 of Fig. 14, the processing 713 of Fig. 15, the processing 811 of Fig. 16, or the processing 915 of Fig. 17.

[0110] In Fig. 18, file numbers are added to the respective transfer history information. The transfer management information that corresponds to the respective file number is constructed of the fields of the "time" and "date" when the

communication associated with the corresponding respective transfer was performed, the field of "transmission/reception" that indicates the kinds of the corresponding communication, i.e., transmission or reception, the field of "device used" that indicates the device that was used for the communication associated with the corresponding transfer, the field of "line used" that indicates the line that was used for the communication associated with the corresponding transfer, and the field of "communication time" that indicates the length of time that was needed for the communication associated with the corresponding transfer. Incidentally, the numbers in the fields "device used" and "line used" each indicate the number that was added to the corresponding device and the number that was added to the corresponding line connected to the corresponding device.

[0111] The contents of the transfer history management table 24b having sequentially registered therein the transfer history information in the above-described way, each time a prescribed amount of time lapses, each time a prescribed number of communications are accumulated, or through inputting of a command to cause forced output from the operation display part 29, are converted, by the system control part 22, into the format of a transfer history management report such as that illustrated in Fig. 19, while referring to the font table 23a of the ROM 23. Then, the thus-converted contents are output, by the plotter 26, by their being recorded onto a recording paper or are displayed on the display device of the operation display

part 29.

[0112] As a result of this, the user can know the history of the intra-device transfers associated with the proxy transmission, or proxy reception, that the device (the self's machine) the user manages participated in. As a result of this, the user becomes able to use that transfer history information for performing, for example, the management of the charges between the divisions.

[0113] Incidentally, although, in the above-explained embodiment, the present invention has been applied to the facsimile device that is a communication terminal device that mainly performs a communication of image information, the present invention is not limited thereto. The present invention can also be similarly applied to a communication terminal device that performs a communication of other kinds of data.

[0114]

[Effect of the Invention] According to the invention concerned with claim 1, a communication that has arrived at the self's device can be received as proxy by another device. On the other hand, a communication that has arrived at another device can be received as proxy by the self's device. Therefore, the plurality of communication terminal devices according to the present invention co-operate with one another to thereby enable effective use of the reception function of the respective communication terminal device and the line connected to the respective communication terminal device. This brings about

the effect that the effective use of the hardware resources becomes possible.

[0115] According to the invention concerned with claim 2, a communication that has been started from the self's device can be performed using an another-device's line connected to another device. On the other hand, a communication that has been started from another device can be performed by the self's device by permitting the other device to use the self's device's line. Therefore, the plurality of communication terminal devices according to the present invention co-operate with one another to thereby enable effective use of the line connected to the respective communication terminal device and the transmission function of the respective communication terminal device. This brings about the effect that the effective use of the hardware resources becomes possible.

[0116] According to the invention concerned with claim 3, only when the side requesting proxy reception and the side having proxy reception requested with respect thereto have coincided with each other in terms of the identification information, that proxy reception is performed. This brings about the effect that, in a case where the communication terminal device the use frequency of that is relatively high has requested with respect thereto proxy reception, that communication terminal device can reject that request. This brings about the effect that, by doing so, it is possible to prevent the self's device's reception from being used for another device to an extent greater than necessary to thereby prevent the self's device from

becoming unable to perform a communication that if ordinary can be done by the self's device.

[0117] According to the invention concerned with claim 4, only when the side requesting the use of an another-device's line and the side having the use of the self's device's line requested with respect thereto have coincided with each other in terms of the identification information, that communication using the another-device's line (having the use of the self's device's line permitted therefor) is performed. This brings about the effect that, in a case where the communication terminal device the use frequency of that is relatively high has had requested with respect thereto the borrowing of the self's device's line, that self's device can reject that request. This brings about the effect that, by doing so, it is possible to prevent the self's device's line from being used for another device to an extent greater than necessary to thereby prevent the self's device from becoming unable to perform a communication that if ordinary can be done by the self's device.

[0118] According to the invention concerned with claim 5, in a case where the other device of priority is set, the self's device requests this other device of priority to perform proxy reception of a communication that has arrived at the self's device's line on behalf of the self's device. Therefore, it is possible to obtain the effect of keeping the self's device's reception function preserved by setting as the other device of priority a device the use frequency of that is relatively low.

[0119] According to the invention concerned with claim 6, in

a case where the other device of priority is set, the self's device requests the other device of priority to lend the other device's line connected to that other device of priority. Therefore, it is possible to obtain the effect of enabling preserving the self's device's line and thereby preferentially handling a communication that comes into the self's device's line and thereby preventing failure of the reception by performing a setting of that in the communication terminal device the use frequency of that is relatively high, the device the use frequency of that is relatively low is set as another device of priority.

[0120] According to the invention concerned with claim 7, since the communication terminal device is equipped with the unoccupied another-device searching means that searches for a device that is among the other devices and that is able to perform proxy reception, there is obtained the effect of enabling doing without the user's amount of time and labor for user's taking the trouble to investigate another device capable of performing proxy reception and designate the same.

[0121] According to the invention concerned with claim 8, since the communication terminal device is equipped with unoccupied another-device's line searching means that searches for an another-device's line that is among the other devices' lines and that is able to perform proxy reception, there is obtained the effect of enabling doing without the user's amount of time and labor for user's taking the trouble to investigate another device whose line can be borrowed and designate the same and

thus enabling the user to perform a communication through the same operation as that in the ordinary case.

[0122] According to the invention concerned with claim 9, the self's device's line arrival communication transfer means, when in case the arrival of a communication has occurred in the self's device's line connected to the self's device the self's device is in the state of being unable to receive, requests another device to perform proxy reception via the cordless transmission/reception means. Therefore, the effect is obtained of enabling, in a case where the self's device is unable to receive, preventing the occurrence of an accident that the self's device is unable to respond and the communication is disabled.

[0123] According to the invention concerned with claim 10, the communication terminal device is further equipped with output means that outputs to the effect that the communication that has arrived at the self's device's line has been received as proxy by the other device. It is therefore possible to notify to the user operating the self's device that the communication that if ordinary should have been received by the self's device has been received as proxy by the other device. This offers the advantage that the user's convenience of use is enhanced.

[0124] According to the invention concerned with claim 11, in a case where the communication that has come into the self's device's line has been proxy-received by another device through the use of the self's device's line arrival communication transfer means, or, in a case where the communication that has

come into an another-device's line has been proxy-received by the another-device's line arrival communication proxy-reception means, the information that is obtained in association with each of those respective communications is stored as transfer history management information and, according to that transfer history management information, a transfer history management report is output. Therefore, the effect is obtained of enabling expressly indicating to the user the information about the proxy reception that the self's device was associated with and thereby easily performing communication charge management between the divisions, etc.

[0125] According to the invention concerned with claim 12, in a case where a communication that has been started from the self's device has been performed, by the self's device started communication transfer means, using an another-device's line, or, in a case where a communication that has been started from another device has been performed, by the another-device started communication relay means, permitting the other device to use the self's device's line, the information that is obtained in association with each of those respective communications is stored as transfer history management information and, according to that transfer history management information, a transfer history management report is output. Therefore, the effect is obtained of enabling expressly indicating to the user the information about the relay communication that the self's device was associated with and thereby easily performing communication charge management

between the divisions, etc.

[BRIEF DESCRIPTION OF THE DRAWINGS]

[Fig. 1] Fig. 1 is a view typically illustrating the disposition construction of a plurality of facsimile devices according to an embodiment of the present invention.

[Fig. 2] Fig. 2 is a view illustrating the block construction of the facsimile device according to the embodiment of the present invention.

[Fig. 3] Fig. 3 is a view illustrating the schematic construction of a net control part of the facsimile device according to the embodiment of the present invention.

[Fig. 4] Fig. 4 is a view illustrating an intra-device transfer management table.

[Fig. 5] Fig. 5 is a view illustrating the intra-device transfer management table.

[Fig. 6] Fig. 6 is a view illustrating the intra-device transfer management table.

[Fig. 7] Fig. 7 is a view illustrating the intra-device transfer management table.

[Fig. 8] Fig. 8 is a view illustrating the format of notification information that is transmitted and received between the devices.

[Fig. 9] Fig. 9 is a view illustrating a processing procedure that is performed in the facsimile device according to the embodiment of the present invention.

[Fig. 10] Fig. 10 is a view illustrating, together with Fig. 9, a processing procedure that is performed in the facsimile

device according to the embodiment of the present invention.

[Fig. 11] Fig. 11 is a view illustrating a processing procedure that is performed in the facsimile device according to the embodiment of the present invention.

[Fig. 12] Fig. 12 is a view illustrating a processing procedure that is performed in the facsimile device according to the embodiment of the present invention.

[Fig. 13] Fig. 13 is a view illustrating, together with Fig. 12, a processing procedure that is performed in the facsimile device according to the embodiment of the present invention.

[Fig. 14] Fig. 14 is a view illustrating, together with Figs. 12 and 13, a processing procedure that is performed in the facsimile device according to the embodiment of the present invention.

[Fig. 15] Fig. 15 is a view illustrating, together with Fig. 12, Fig. 13, and Fig. 14, a processing procedure that is performed in the facsimile device according to the embodiment of the present invention.

[Fig. 16] Fig. 16 is a view illustrating, together with Fig. 12, Fig. 13, Fig. 14, and Fig. 15, a processing procedure that is performed in the facsimile device according to the embodiment of the present invention.

[Fig. 17] Fig. 17 is a view illustrating a processing procedure that is performed in the facsimile device according to the embodiment of the present invention.

[Fig. 18] Fig. 18 is a view illustrating a transfer history management table.

[Fig. 19] Fig. 19 is a view illustrating a transfer history management report.

[DESCRIPTION OF THE SYMBOLS]

1, 2, 3, 4 facsimile device

22 system control part

23a font table

23b transfer history management table

25 scanner

26 plotter

27 image memory

28 coding/decoding part

29 operation display part

30 modem

31 net control part

31a direct current detection part

31b arrival communication part

40 line

L1, L2, L3, L4 self's device's line of the respective device

S1, S2, S3, S4, S5, S6 switch

T1, T2, T3 line transformer

[FIG. 1]

1 FACSIMILE DEVICE (FAX1)
2 FACSIMILE DEVICE (FAX2)
3 FACSIMILE DEVICE (FAX3)
4 FACSIMILE DEVICE (FAX4)
40 LINE

[FIG. 2]

22 SYSTEM CONTROL PART
23a FONT TABLE
25 SCANNER
26 PLOTTER
27 IMAGE MEMORY
28 CODING/DECODING PART
29 OPERATION DISPLAY PART
30 MODEM
31 NET CONTROL PART
32 CORDLESS TRANSMISSION/RECEPTION PART
34 HAND SET
40 LINE

[FIG. 3]

30-1 MODEM 30 (RECEPTION)
30-2 MODEM 30 (TRANSMISSION)
31a DIRECT CURRENT DETECTION PART
31b ARRIVAL COMMUNICATION DETECTION PART
32 CORDLESS TRANSMISSION/RECEPTION PART (VIRTUAL OTHER-
DEVICE'S LINE)
34 HAND SET

T1 LINE TRANSFORMER

T2 LINE TRANSFORMER

T3 LINE TRANSFORMER

40 LINE

40-1 SELF'S DEVICE'S LINE

[FIG. 4]

24a INTRA-DEVICE TRANSFER MANAGEMENT TABLE (FAX1)

① DEVICE (LINE)

② IDENTIFICATION NUMBER

③ SELF'S DEVICE

④ ANOTHER DEVICE OF PRIORITY (ANOTHER-DEVICE'S LINE OF PRIORITY)

[FIG. 5]

24a INTRA-DEVICE TRANSFER MANAGEMENT TABLE (FAX2)

① DEVICE (LINE)

② IDENTIFICATION NUMBER

③ SELF'S DEVICE

④ ANOTHER DEVICE OF PRIORITY (ANOTHER DEVICE OF PRIORITY'S LINE)

[FIG. 6]

24a INTRA-DEVICE TRANSFER MANAGEMENT TABLE (FAX3)

① DEVICE (LINE)

② IDENTIFICATION NUMBER

③ SELF'S DEVICE

④ ANOTHER DEVICE OF PRIORITY (ANOTHER DEVICE OF PRIORITY'S LINE)

[FIG. 7]

24a INTRA-DEVICE TRANSFER MANAGEMENT TABLE (FAX4)
① DEVICE (LINE)
② IDENTIFICATION NUMBER
③ SELF'S DEVICE
④ ANOTHER DEVICE OF PRIORITY (ANOTHER DEVICE OF PRIORITY'S LINE)

[FIG. 8]

⑤ ANOTHER DEVICE (ANOTHER-DEVICE'S LINE) IDENTIFICATION NUMBER
⑥ SELF'S DEVICE (SELF'S DEVICE'S LINE) IDENTIFICATION NUMBER
⑦ NOTIFICATION INFORMATION

[FIG. 9]

⑧ START
101 HAS SELF'S DEVICE'S TRANSMISSION (PHONE TALK) BEEN STARTED?
102 IS SELF'S DEVICE REQUESTING ANOTHER DEVICE TO PERFORM PROXY TRANSMISSION?
103 IS SELF'S DEVICE PERFORMING PROXY RECEPTION BY BEING SO REQUESTED BY ANOTHER DEVICE?
104 IS AN ANOTHER DEVICE OF PRIORITY'S LINE SET?
105 INQUIRES ABOUT LINE STATUS OF THE OTHER DEVICE OF PRIORITY'S LINE
106 IS THE OTHER DEVICE OF PRIORITY'S LINE UNOCCUPIED?
107 NOTIFIES ID
108 IS ID OK?
109 CONNECTS SELF'S DEVICE'S MODEM OR HAND SET TO VIRTUAL

OTHER-DEVICE'S LINE

110 ESTABLISHES VIRTUAL LINE
111 TRANSMISSION (PHONE TALK)
112 HAS FINISHED?
113 NOTIFIES COMPLETION TO THE OTHER DEVICE
114 REGISTERS TRANSFER HISTORY INFORMATION
⑨ END
[FIG. 10]
201 IS SELF'S DEVICE'S LINE UNOCCUPIED?
202 IS SELF'S DEVICE REQUESTING ANOTHER DEVICE TO PERFORM
PROXY TRANSMISSION?
204 CONNECTS SELF'S DEVICE'S MODEM OR HAND SET TO SELF'S
DEVICE'S LINE
205 ESTABLISHES LINE
206 TRANSMISSION (PHONE TALK)
207 HAS FINISHED?
203 OUTPUTS TO THE EFFECT OF BEING UNABLE TO TRANSMIT
⑨ END
[FIG. 11]
⑧ START
301 HAS LINE STATUS OF SELF'S DEVICE'S LINE BEEN INQUIRED
ABOUT?
302 CONFIRMS STATUS OF THE LINE
303 IS LINE UNOCCUPIED?
304 NOTIFIES "UNOCCUPIED"
305 NOTIFIES "NOT UNOCCUPIED"?
306 IS THERE NOTIFICATION OF ID?

307 IS ID OK?

308 NON-NOTIFIES ID (REJECTS REQUEST FOR PROXY TRANSMISSION)

309 NOTIFIES ID (ACCEPTS REQUEST FOR PROXY TRANSMISSION)

310 CONNECTS SELF'S DEVICE'S LINE TO VIRTUAL OTHER-DEVICE'S LINE

311 ESTABLISHES VIRTUAL LINE

312 TRANSMISSION (PHONE TALK)

313 HAS THERE BEEN NOTIFICATION OF TERMINATION?

314 REGISTERS TRANSFER HISTORY INFORMATION

⑨ END

[FIG. 12]

⑧ START

401 HAS COMMUNICATION ARRIVED ?

402 IS SELF'S DEVICE'S RECEPTION FUNCTION OK?

403 IS SELF'S DEVICE PERFORMING PROXY RECEPTION FROM ANOTHER DEVICE?

404 OUTPUTS TO THE EFFECT OF BEING UNABLE TO RECEIVE

⑨ END

405 CONNECTS SELF'S DEVICE'S MODEM TO SELF'S DEVICE'S LINE

406 ESTABLISHES LINE

407 RECEPTION

408 HAS SELF'S DEVICE'S TRANSMISSION (PHONE TALK) BEEN STARTED?

409 HAS RECEPTION FINISHED?

⑩ END

[FIG. 13]

501 IS SELF'S DEVICE REQUESTING ANOTHER DEVICE TO PERFORM

PROXY TRANSMISSION?

502 OUTPUTS TO THE EFFECT OF BEING UNABLE TO RECEIVE
⑨ END
503 IS ANOTHER DEVICE OF PRIORITY SET?
504 INQUIRIES ABOUT LINE STATUS OF THE OTHER DEVICE OF PRIORITY
505 IS RECEPTION OK?
506 NOTIFIES ID
507 IS ID OK?
508 CONNECTS SELF'S DEVICE'S LINE TO VIRTUAL OTHER-DEVICE'S
LINE
509 ESTABLISHES VIRTUAL LINE
510 RECEPTION
511 IS THERE NOTIFICATION OF TERMINATION?
512 REGISTERS TRANSFER HISTORY INFORMATION
513 OUTPUTS TO THE EFFECT OF THE COMMUNICATION'S HAVING BEEN
TRANSFER-RECEIVED
⑩ END

[FIG. 14]

601 INQUIRIES ABOUT ANOTHER DEVICE'S RECEPTION FUNCTION
602 IS THERE ANOTHER DEVICE WHOSE RECEPTION FUNCTION IS OK?
603 OUTPUTS TO THE EFFECT OF BEING UNABLE TO RECEIVE
⑨ END
604 NOTIFIES ID
605 IS ID OK?
606 CONNECTS SELF'S DEVICE'S LINE TO VIRTUAL OTHER-DEVICE'S
LINE
607 ESTABLISHES VIRTUAL OTHER-DEVICE'S LINE

608 RECEPTION
609 IS THERE NOTIFICATION OF TERMINATION?
610 REGISTERS TRANSFER HISTORY INFORMATION
611 OUTPUTS TO THE EFFECT OF THE COMMUNICATION'S HAVING BEEN
TRANSFER-RECEIVED

⑩ END

[FIG. 15]

701 IS SELF'S DEVICE REQUESTING ANOTHER DEVICE TO PERFORM
PROXY TRANSMISSION?

702 OUTPUTS TO THE EFFECT OF BEING UNABLE TO TRANSMIT

⑨ END

703 IS ANOTHER DEVICE OF PRIORITY SET?

704 INQUIRIES ABOUT LINE STATUS OF THE OTHER DEVICE OF
PRIORITY'S LINE

705 IS THE OTHER DEVICE OF PRIORITY'S LINE UNOCCUPIED?

706 NOTIFIES ID

707 IS ID OK?

708 CONNECTS SELF'S DEVICE'S MODEM OR HAND SET TO VIRTUAL
OTHER-DEVICE'S LINE

709 ESTABLISHES VIRTUAL LINE

710 TRANSMISSION (PHONE TALK)

711 HAS FINISHED?

712 NOTIFIES TERMINATION TO THE OTHER DEVICE

713 REGISTERS TRANSFER HISTORY INFORMATION

⑩ END

[FIG. 16]

801 INQUIRIES ABOUT STATUS OF OTHER-DEVICES' LINES